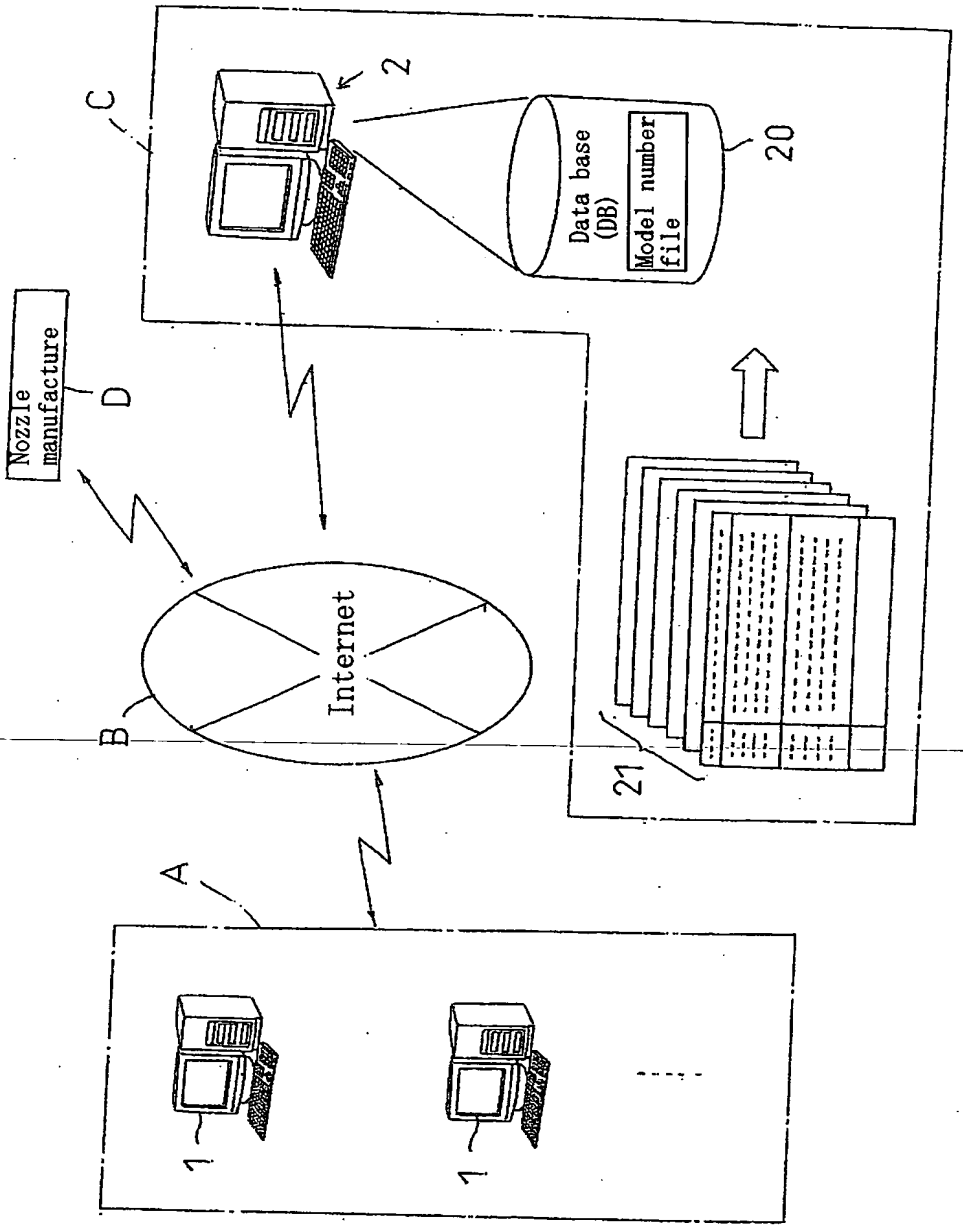
Fig 1



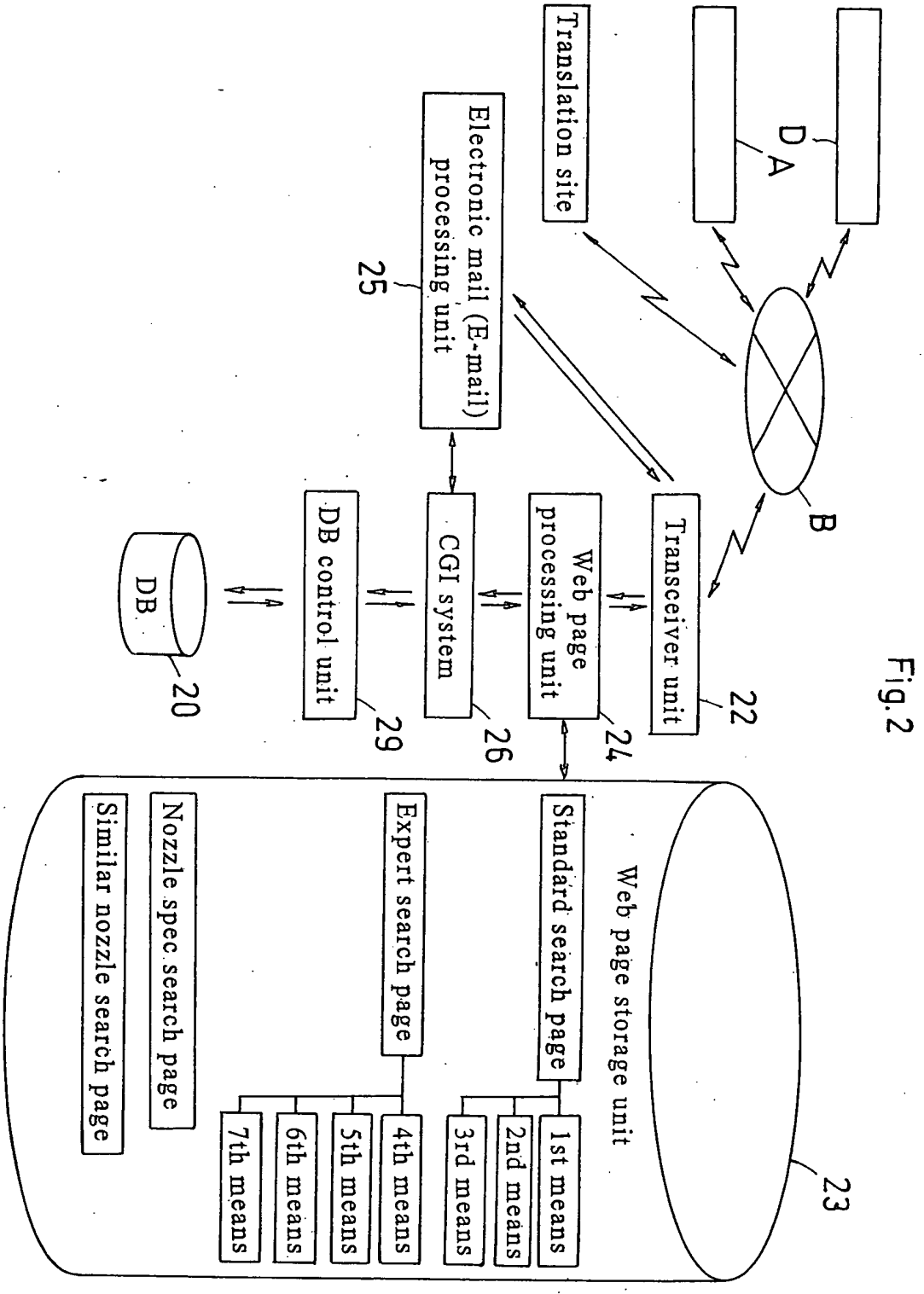
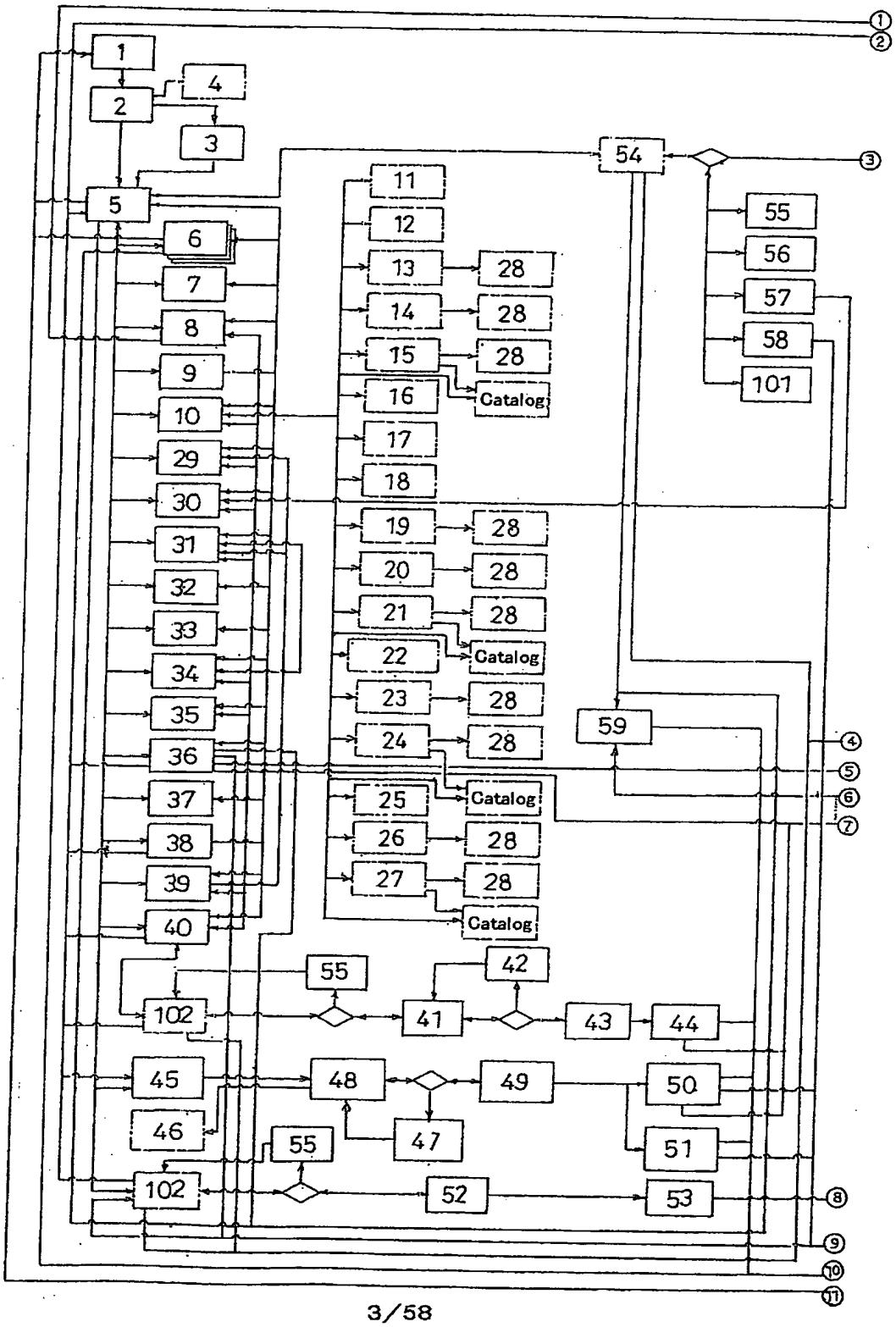

Translation site
D
A
B
Electronic mail (E-mail) processing unit
25
Transceiver unit
22
Web page processing unit
24
CGI system
26
DB control unit
29
DB
20
Web page storage unit
23
Standard search page
1st means
2nd means
3rd means
Expert search page
4th means
5th means
6th means
7th means
Nozzle spec search page
Similar nozzle search page

Fig.2

Fig 3


1
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20
21
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37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
101
102
Catalog
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪

Fig 4

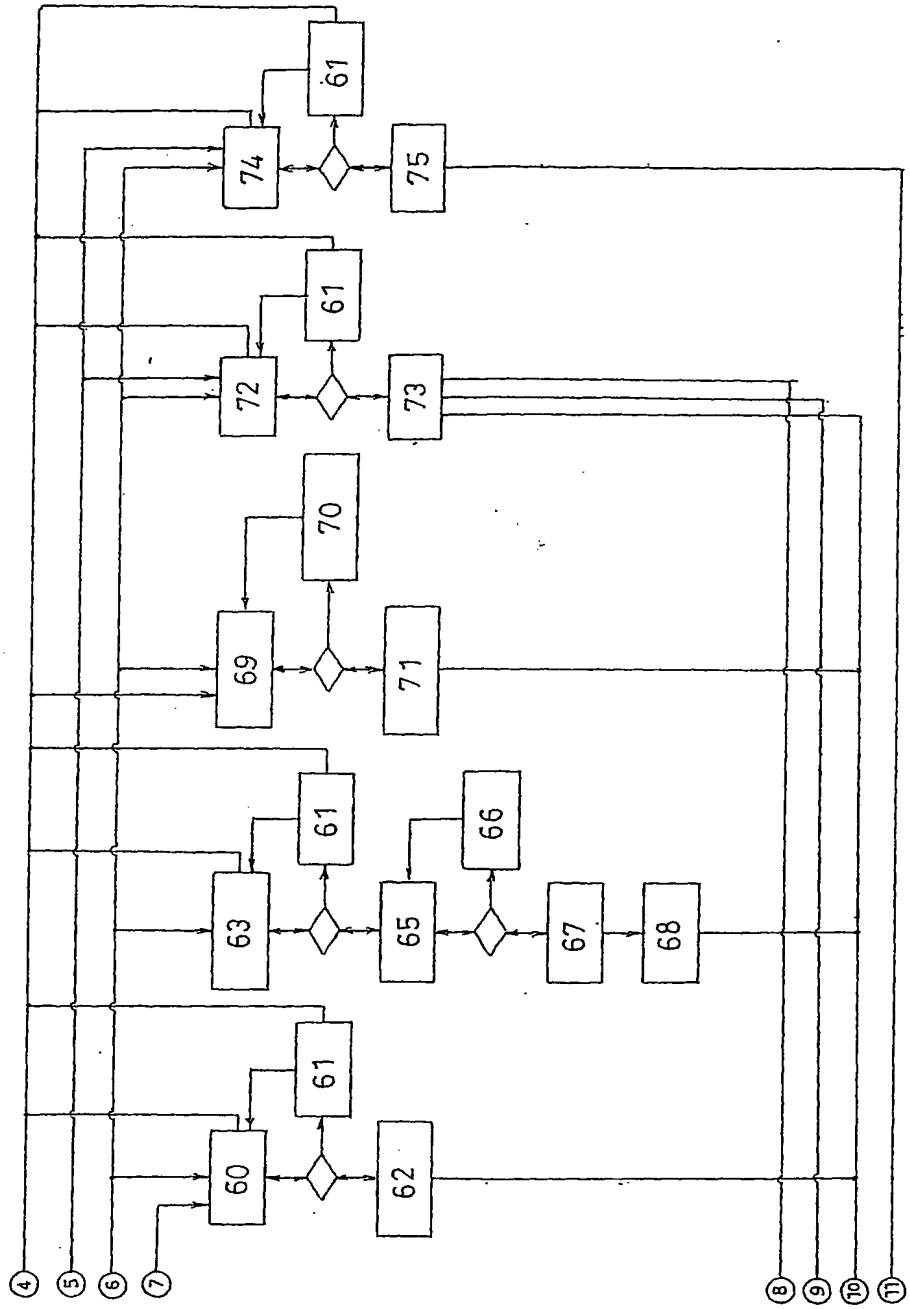
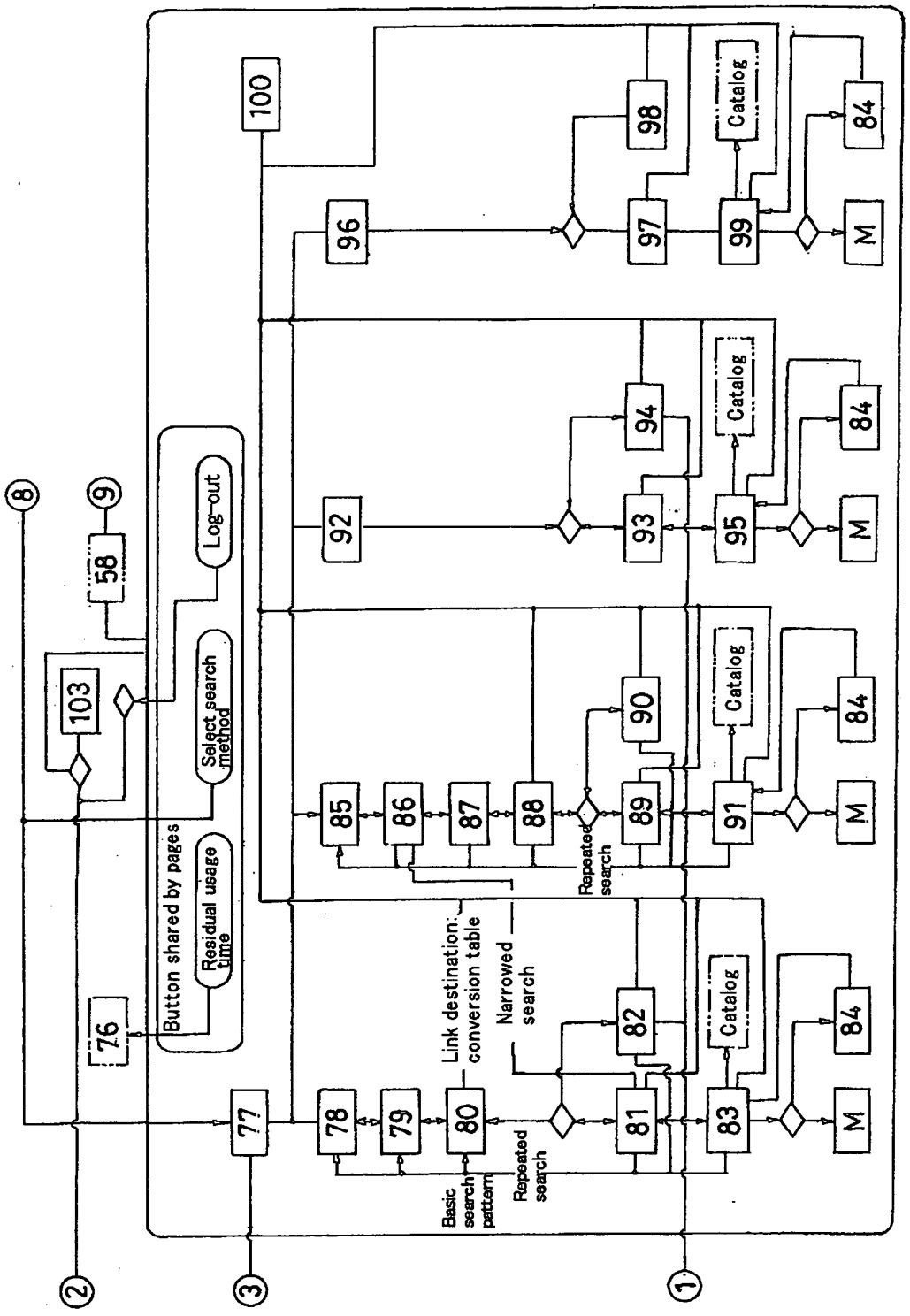


Fig.5



10/539673

Fig.6

Select the type of search
Begin the search operation from this page

Residual usage time

Four search methods usable freely and repeatedly within agreed usage time

Nozzle model number search

Standard search

[General criteria input: multiple nozzle model number search]
Rough search method. By inputting simplified set of search criteria, many nozzle numbers can be retrieved over a wide range. Further, by linking to "expert search" input screen, narrowed search can be made

40

To search screen

Expert search

[Input detailed criteria: high-accuracy nozzle model number search]
High accuracy search method. By inputting pressure, flow rate and the like search criteria in detail, the narrowed search is made possible in which the nozzle model number is retrieved at pin point from a vast number of numerical values from DB.

40

To search screen

Nozzle spec search

Nozzle spec search

[Input nozzle model number: nozzle spec search]
By inputting full nozzle model number as search criteria, the manufacture name and detailed spec of the nozzle can be retrieved. Also, the ambiguous search function may make possible search by inputting a part of the model number.

40

To search screen

Similar nozzle search

Similar nozzle search

[Input nozzle model number: similar nozzle search]
By inputting one nozzle model number, similar nozzles can be retrieved from nozzles of the world. The retrieved nozzle, however, not necessarily has the same performance as the nozzle of which the model number is input by the user. Therefore, please study it for reference.

40

To search screen

Note

Fig.7

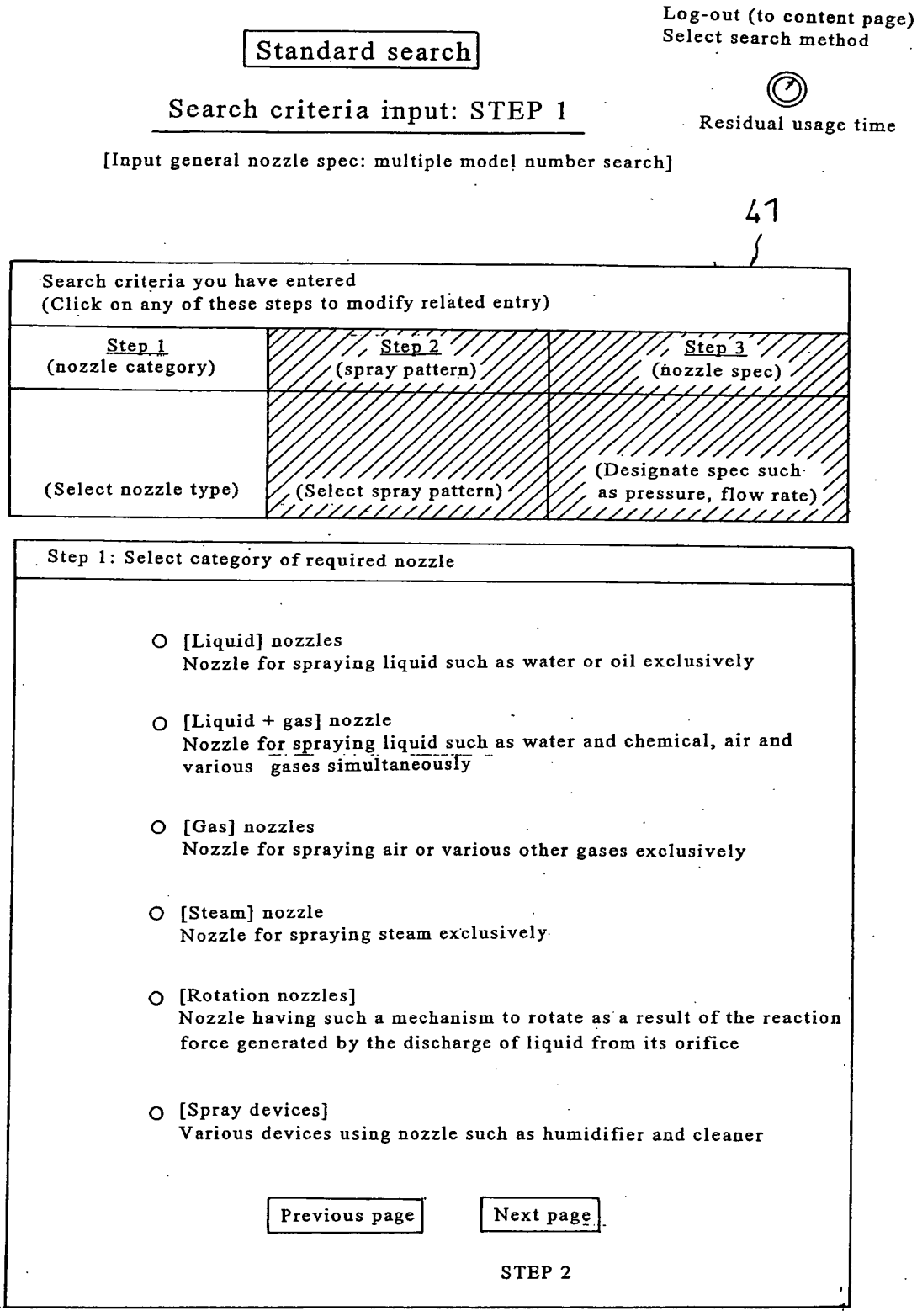

Log-out (to content page)
Select search method
Residual usage time
Standard search
Search criteria input: STEP 1
[Input general nozzle spec: multiple model number search]
41
Search criteria you have entered
(Click on any of these steps to modify related entry)
Step 1
(nozzle category)
Step 2
(spray pattern)
Step 3
(nozzle spec)
(Select nozzle type)
(Select spray pattern)
(Designate spec such as pressure, flow rate)
Step 1: Select category of required nozzle
O [Liquid] nozzles
Nozzle for spraying liquid such as water or oil exclusively
O [Liquid + gas] nozzle
Nozzle for spraying liquid such as water and chemical, air and various gases simultaneously
O [Gas] nozzles
Nozzle for spraying air or various other gases exclusively
O [Steam] nozzle
Nozzle for spraying steam exclusively
O [Rotation nozzles]
Nozzle having such a mechanism to rotate as a result of the reaction force generated by the discharge of liquid from its orifice
O [Spray devices]
Various devices using nozzle such as humidifier and cleaner
Previous page
Next page
STEP 2

Fig.8

Log-out (to content page)
Select search method

Expert search

Residual usage time

Search criteria input : STEP 2

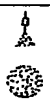
(input detailed nozzle spec: high-accuracy nozzle model number search)

41

Search criteria you have entered
(Click on any of these steps to modify related entry)

Step 1 nozzle category	Step 2 spray pattern	Step 3 nozzle spec
Steam nozzle	(Select spray pattern)	(Designate spec such as pressure and flow rate)

Step 2: Select inlet direction

Select	Shape ID	Spray pattern	Description
○	SJ		Nozzle with dot-shaped spray pattern section
○	FC		Nozzle with solid circular spray pattern section
○	HC		Nozzle with hollow, circular, ring-shaped spray pattern section
○	O		Nozzle with oval spray pattern section
○	SQ		Nozzle with square-shaped spray pattern section
○	RS		Injected in transverse direction
○	ST		Nozzle for film-shaped injection from slit-shaped orifice
◉	S	Nil	

Previous page Next page

Fig.9

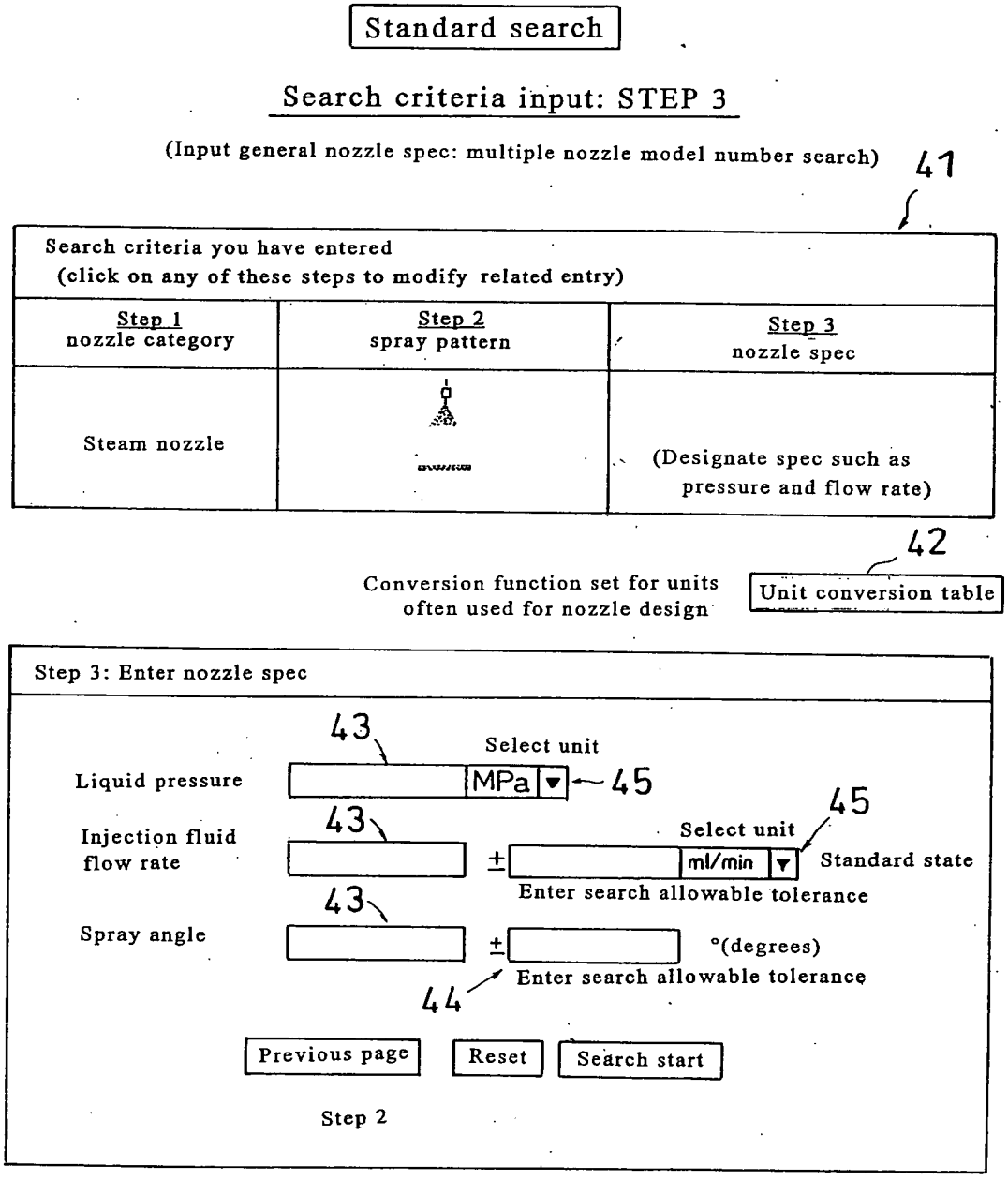

Standard search
Search criteria input: STEP 3
(Input general nozzle spec: multiple nozzle model number search)
41
Search criteria you have entered
(click on any of these steps to modify related entry)
Step 1
nozzle category
Step 2
spray pattern
Step 3
nozzle spec
Steam nozzle
(Designate spec such as pressure and flow rate)
42
Conversion function set for units often used for nozzle design
Unit conversion table
Step 3: Enter nozzle spec
43
Select unit
Liquid pressure
MPa
45
Injection fluid flow rate
Select unit
ml/min
Standard state
Enter search allowable tolerance
Spray angle
°(degrees)
Enter search allowable tolerance
44
Previous page
Reset
Search start
Step 2

Fig.10

Standard search

Search result list

(Input general nozzle spec: multiple nozzle model number search) 41

Search criteria you have entered (Click on any of these steps to modify related entry)		
Step 1 nozzle category	Step 2 spray pattern	Step 3 nozzle spec
Steam nozzle		Liquid pressure: 2.0 MPa Liquid flow rate: 200.1 ml/min Spray angle: 60 ± 0.1°

Function is set to convert the unit often used for nozzle design — Unit conversion table

search result list 42

Convenient functions
By clicking model number, nozzle detail and catalog image are displayed
One-click conversion is possible by "unit select" button ▼ in pressure and flow rate column
Display order of each column can be selected by rearrange button ▼

Rearrange | Manufacture | Ascending order |

Display 1st to 20th ones of oooo search items

No.	System code	Manufacture	Nationality	Catalog language	Manufacture model number	Display detail by click	Pressure			Flow rate			Spray angle (°)
							Catalog value		Conversion value	Catalog value		Conversion value	
							Pressure value	Unit	Unit select	Flow rate value	Unit	Unit select	
									MPa			l/min	

Previous page — Step 3 — 46
Select "search method" (Enter search criteria anew) — 47
Log-out (SGS content page) — 47

Expert search
(Search by further narrowing search result)

Fig.11

Standard search

Search result detail list

(General nozzle spec input: multiple nozzle model number search) 41

Search criteria you have entered (Click on any of these steps to modify related entry)		
Step 1 nozzle category	Step 2 spray pattern	Step 3 nozzle spec
Steam nozzle		Liquid pressure: 2.0 MPa Liquid flow rate: 200.1 ml/min Spray angle: 60 ± 0.1°

Conversion function is set for unit often used for nozzle design

Unit conversion table 42

Search result detail list	
Manufacture model number	○ ○ ○ ○ ○ 48
Manufacture	△ △ △
Nationality	Japan
Catalog language	
URL	http://www.nozzle-○○○○.com
Valve function	Absent
Strainer	Absent
SGS classification	Flat nozzle
Product name	Flat nozzle
Orifice material	Stainless steel
Heat resistance temperature	90° C 194° F
Color	
Mounting screw	Rc 1/8 Female
Flange type	Absent
Orifice diameter	2.1 mm 0.083 inch
Free passage diameter	2.0 mm 0.079 inch
Weight	0.014 Kg

2.2 lb

Fig.12

Inlet direction	Fluid flows in from the rear of nozzle body
Spray pattern	Flat spray
Pressure, flow rate, spray angle	Catalog value Pressure-flow rate characteristic table Pressure (bar) 0.5 1.0 2.0 3.0 5.0 10.0 Flow rate (l/min) 1.0 1.41 2.0 2.45 3.16 4.47 Pressure-spray angle characteristic table Pressure (bar) 2.0 Spray angle (degree) 43 Unit conversion value (above catalog value can be converted) Pressure-flow rate characteristic table 49 Pressure MPa 0.05 0.1 0.2 0.3 0.5 1.0 Flow rate l/min 1.0 1.41 2.0 2.45 3.16 4.47 Pressure-spray angle characteristic table Pressure MPa 2.0 Spray angle (degree) 43 50

Catalog image (page related to retrieved nozzle. Click to enlarge screen.

51 51

Click this button, and mailer with page on display is started, making possible direct inquiry to nozzle manufacture retrieved. Transmission to other than Japanese nozzle manufactures is automatically accompanied by English page corresponding to page on display

52 Attaching mailer start to nozzle manufacture

Previous page (search result list) | Select "search method" 53 (Enter search criteria anew) | Log-out (SGS content page)

Fig.13

Expert search

Search criteria input: STEP 1

(Enter detailed nozzle spec: high-accuracy nozzle model number search)

Proceed from steps 1 to 4 and enter search criteria. With the advance of steps, the contents enter in column "Search criteria you have entered" are displayed. Even in the middle of each step, the process can be returned to preceding steps and enter contents can be changed.

Search criteria you have entered
(Click on any of these steps to modify related entry)

Step 1 nozzle category	Step 2 inlet direction	Step 3 spray pattern	Step 4 nozzle spec
Steam nozzle	(Select inlet direction)	(Select spray pattern)	(Designate pressure, flow rate and other spec)

54

Step 1: Select nozzle category

[Liquid] nozzles
Nozzle for spraying liquid such as water or oil exclusively

[Liquid + gas] nozzles
Nozzle for spraying liquid such as water or chemical and gas such as air or various gases at the same time

[Gas] nozzles
Nozzle for spraying air or various other gases exclusively

[Steam] nozzles
Nozzle for spraying steam exclusively

[Rotation nozzles]
Nozzle having such a mechanism to rotate as a result of the reaction force generated by the discharge of liquid from its orifice

[Spray devices]
Various devices using nozzle such as humidifier and cleaner

Fig.14

Expert search

Search criteria input: STEP 2

(Input detailed nozzle spec: high-accuracy search of nozzle model number)

54

Search criteria you have entered
(Click on any of these steps to modify related entry)

Step 1 nozzle category	Step 2 inlet direction	Step 3 spray pattern	Step 4 nozzle spec
Steam nozzle	(Select inlet direction)	(Select spray pattern)	(Designate spec such as pressure and flow rate)

Step 2: select inlet direction

Select	Inlet direction ID	Inlet direction	Description
○	A		Two types of fluid flow in from the rear of nozzle body
○	B		Two types of fluid flow in from rear and sides, respectively, of nozzle body
○	C		Both two types of fluid flow in from sides of nozzle body
○	D		Two types of fluid flow in from the rear of nozzle body and discharged axial to nozzle body
○	E		Two types of fluid flow in from the rear and sides of nozzle body, respectively, and discharged axial to nozzle body
○	L		Fluid flows in from the rear of nozzle body and discharged axial to nozzle body
◉	S		Nil

Previous page Next page

Step 1 Step 2

Fig.15

Expert search

Search criteria input: STEP 3

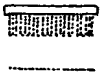
54

(Input detailed nozzle spec: high-accuracy search of nozzle model number)

Search criteria you have entered
(Click on any of these steps to modify related entry)

Step 1 nozzle category	Step 2 inlet direction	Step 3 spray pattern	Step 4 nozzle spec
Steam nozzle		(Select spray pattern)	(Designate spec such as pressure and flow rate)

Step 2: select spray pattern

Select	Shape ID	Spray pattern	Description
○	SJ		Nozzle with dot-shaped spray pattern section
○	FC		Nozzle with solid circle spray pattern section
○	HC		Nozzle with hollow, circular, ring-shaped spray pattern section
○	O		Nozzle with oval spray pattern section
○	SQ		Nozzle with square-shaped spray pattern section
○	RS		Discharged in transverse direction
○	ST		Nozzle for film-shaped injection from slit-shaped orifice
◉	S		Nil

Previous page Next page

Fig.16

Expert search

- Search criteria input: STEP 4

(Input detailed nozzle spec: high-accuracy search of nozzle model number) 54

Search criteria you have entered
(Click on any of these steps to modify related entry)

Step 1 nozzle category	Step 2 inlet direction	Step 3 spray pattern	Step 4 nozzle spec
Steam nozzle			(Designate spec such as pressure and flow rate)

Conversion function of unit often used for nozzle design is set — Unit conversion table

Step 4: Enter nozzle spec

1. Manufacture: Not designated
2. w/ valve function: ⊙ Not designated, ○ With, ○ Without
3. w/ strainer: ⊙ Not designated, ○ With, ○ Without
4. Orifice material: Not designated
5. Mounting screw
   Standard: Not designated
   Size: Not designated
   Male/female: ⊙Not designated, ○Male, ○Female
6. Free passage diameter: (Select unit) mm
7. Gas pressure: (Select unit) MPa
8. Injection fluid flow rate: ± (Select unit) ml/min Standard state
   (Enter search allowable tolerance)
9. Spray angle: ± ° (degree)
   (Enter search allowable tolerance)

Previous page | Reset | Search start

Step 3

Fig.17

Nozzle spec search

(Input nozzle model number: nozzle spec search)

◎ Input full model number.
Ambiguous search function may make search possible by inputting only a part of model number

Nozzle model number [ ]

Or

◎ Search is possible also by inputting system code

System code [ ]

Search start

Fig.18

Similar nozzle search

(Input nozzle model number: similar nozzle search)

Designate reference nozzle.

◎ Input full model number
(Take care that unless model number is completely coincident, similar nozzle cannot be retrieved)

Nozzle model number [ ]

Or

◎ Search is also possible by inputting system code

System code [ ]

◎ Designate reference pressure

[ ] Unit [ ]

Designate allowable tolerance for similar nozzle search

◎ Designate flow rate allowable tolerance

○ ±0% ○ ±5% ○ ±10% ○ ±15% ○ ±20%

○ Others : + [ ] %

− [ ] %

◎ Designate angle allowable tolerance

○ ±0% ○ ±5% ○ ±10% ○ ±15% ○ ±20%

○ Others : + [ ] %

− [ ] %

Search start

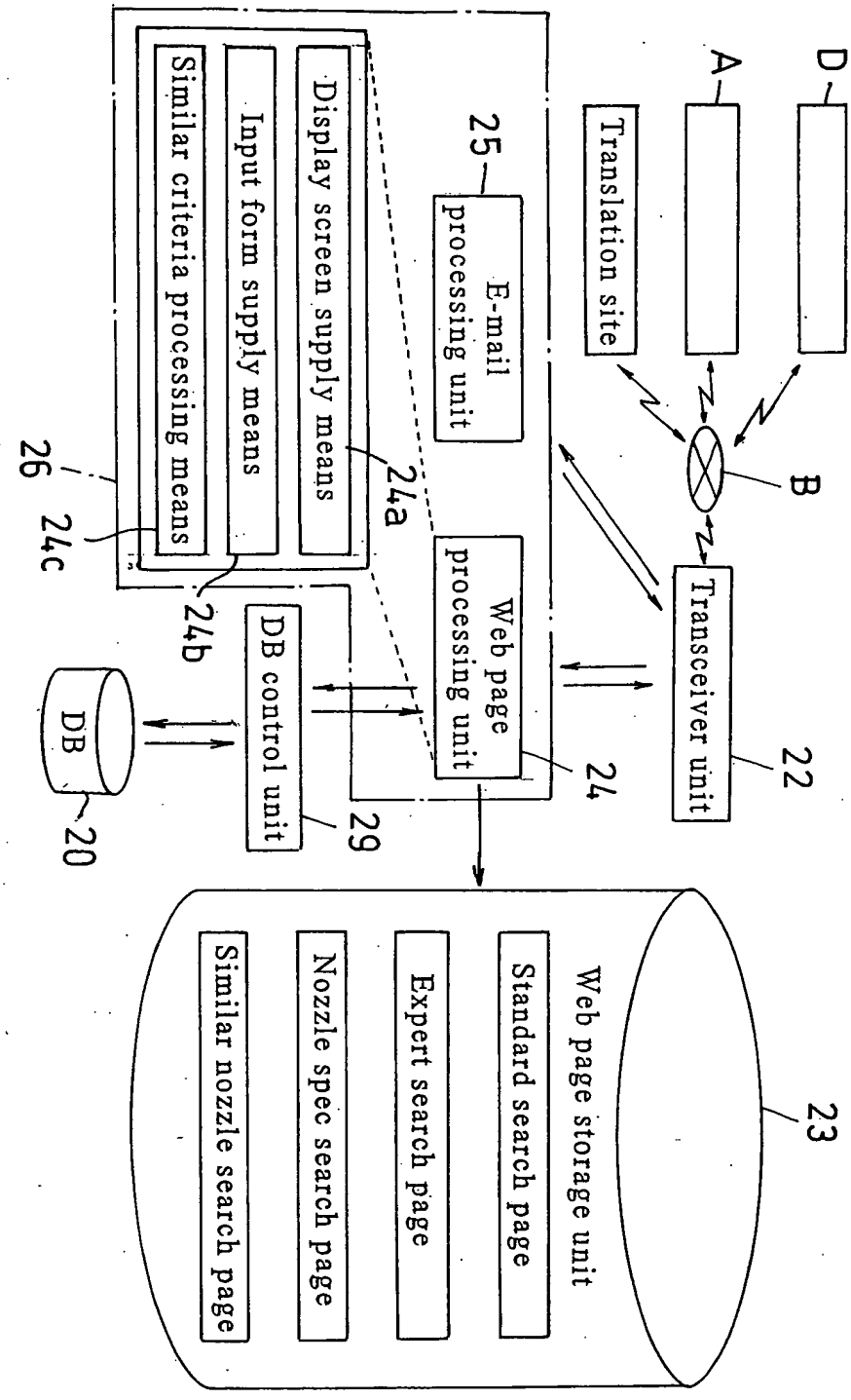

D
A
B
Translation site
Transceiver unit
22
25
E-mail processing unit
Web page processing unit
24
Display screen supply means
24a
Input form supply means
24b
Similar criteria processing means
24c
26
DB control unit
29
DB
20
Web page storage unit
23
Standard search page
Expert search page
Nozzle spec search page
Similar nozzle search page

Fig.19

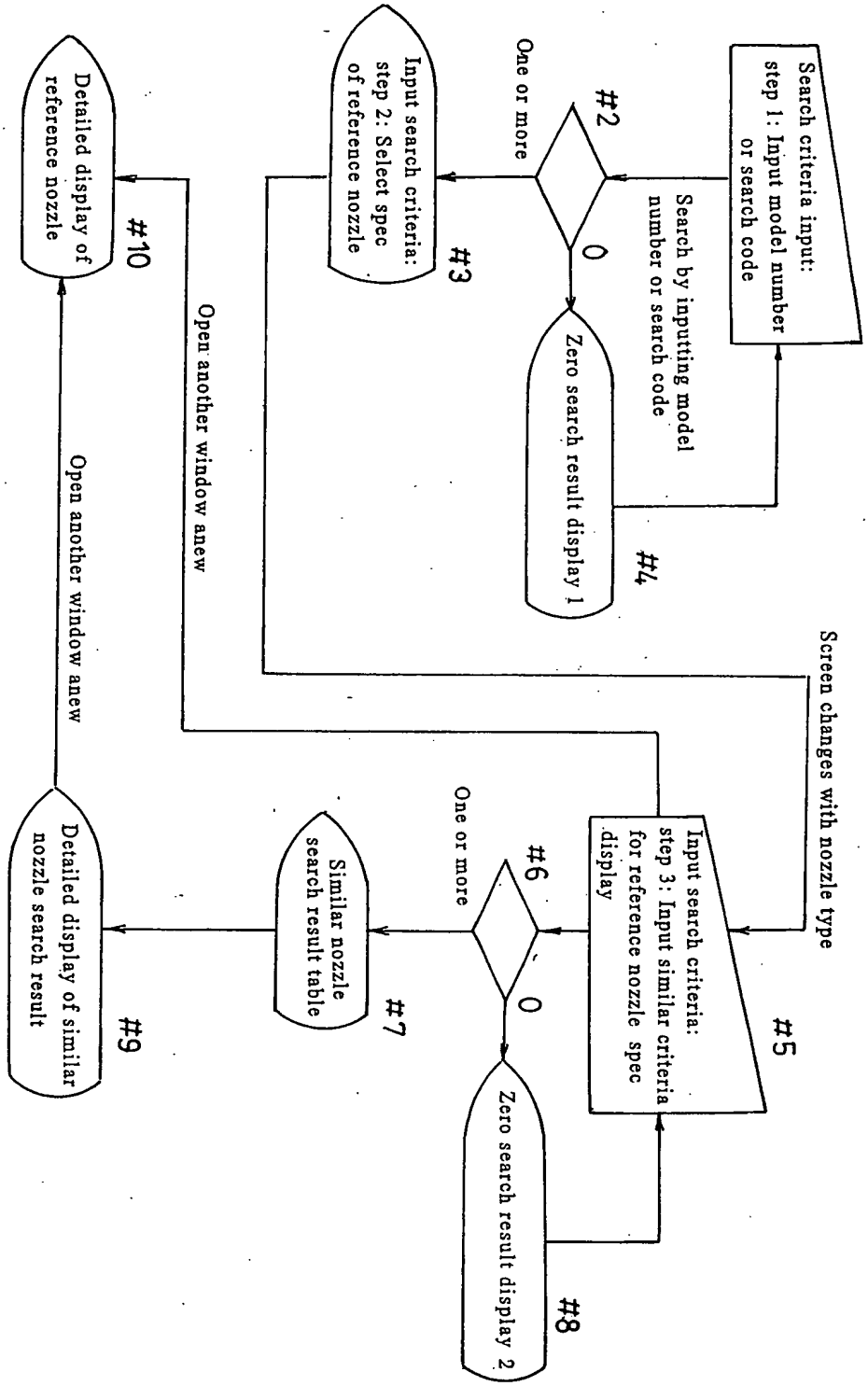

#1
Search criteria input:
step 1: Input model number
or search code
#2
One or more
0
Search by inputting model
number or search code
Zero search result display 1
#4
Input search criteria:
step 2: Select spec
of reference nozzle
#3
Detailed display of
reference nozzle
#10
Open another window anew
Screen changes with nozzle type
Input search criteria:
step 3: Input similar criteria
for reference nozzle spec
display
#5
#6
One or more
0
Similar nozzle
search result table
#7
Zero search result display 2
#8
Detailed display of similar
nozzle search result
#9
Open another window anew

Fig. 20

Fig.21

Similar nozzle search

Search criteria input: STEP 1

Page for inputting nozzle model number providing reference for similar nozzle search.

Begin here for explanation of search process

Step 1: input reference nozzle model number

(input nozzle model number or search code number below)

Correctly input full model number of reference nozzle for similar nozzle search

Input numeral, character or code of a part constituting nozzle full model number as a key word, and then full nozzle model number including them and spec can be retrieved (for more detail, click here)

Input nozzle model number [ ] [Search start]
60 61

Input possible also with reference nozzle search code number (input 6-digit numeral. Ex: 123-456)

Input search code number:SGS [ ] [Search start]
60 61

(Notes)

1. Nozzle model number is mainly configured of nozzle spec including mounting size, material, flow rate, spray angle and spray pattern converted into key word of numeral, character and code. Key word and structure are varied from one nozzle manufacture to another.

1. In the case where the model number you have entered is incorrect or a part of full model number is entered as search criteria by key word, all nozzle model numbers including the key word are extracted. Therefore, a plurality of nozzle manufactures and a variety of types of nozzles may be displayed at the same time in "search result list".

Fig.22

Similar nozzle search

Log-out (to content page)
Select search method

Search criteria input: STEP 2

Page for selecting reference nozzle spec
Begin here for explanation of search procedure

Reference nozzle you have entered	
Nozzle model number	ABC
Search code number	

Notice on zero search result

The nozzle model number or nozzle spec of the contents you have entered as search criteria are not registered in DB of this system and therefore cannot be retrieved. Search again by changing search criteria, or confirm the data base contents by "largest DB in nozzle history" in the content page.

Previous page

Fig.23

Similar nozzle search

Log-out (to content page)
Select search method

Search criteria input: STEP 2

Page for selecting reference nozzle spec
(Begin here for explanation of search procedure)

Reference nozzle you have entered	
Nozzle model number	ABC
Search code number	

Step 2: Select reference nozzle spec
(Each time the search code number below is clicked, the detailed spec of particular nozzle is displayed at step 3. Select desired step-3 screen and go on to input in the page)

Convenient functions:
Clicking search code number, STEP 3 is displayed, and the detail and catalog image of the nozzle can be viewed.
Display sequence on each column can be selected by rearrange button ▼

Rearrange: Search code number ▼ Ascending order ▼ Go

Conversion function of unit often used for nozzle design is set

Unit conversion table

62

Of 329 search items, 1 to 15 items are displayed

63

No.	Search code number (Click to spec confirming step 3)	Nozzle category	Manufacture name	Nationality	Catalog language	Manufacture model number	Orifice material	Valve	Strainer
1	SGS 233-311	Nozzle for liquid	○○○	GBR	eng	△△△	Brass	—	—
2	SGS 233-312	Nozzle for liquid	○○○	GBR	eng	□□□□	Stainless steel	—	—
3	SGS 234-249	Nozzle for liquid	○○○	GBR	eng		Brass	—	○
4	SGS 234-250	Nozzle for liquid	○○○	GBR	eng		Stainless steel	—	○
5	SGS 234-251	Nozzle for liquid	○○○	GBR	eng		Brass	—	○
6	SGS 234-252	Nozzle for liquid	○○○	GBR	eng		Stainless steel	—	○
7	SGS 234-253	Nozzle for liquid	○○○	GBR	eng		Brass	—	○
8	SGS 234-254								

Fig.24

Similar nozzle search

Search criteria input: STEP 3

Log-out (to content page)
Select search method

Page for designating similar nozzle search criteria. Begin here for explanation of search procedure

This "similar nozzle search" makes it possible to select a similar item from reference nozzle spec designated by you, and retrieve nozzle of high similarity level. (The contents selected by you in "similar nozzle search criteria" column in the table below make up the "definition of similar nozzle" desired by you. Also, please note that the correct name of the nozzle retrieved based on this definition is "similar nozzle defined by you", and not a generally called similar nozzle.)

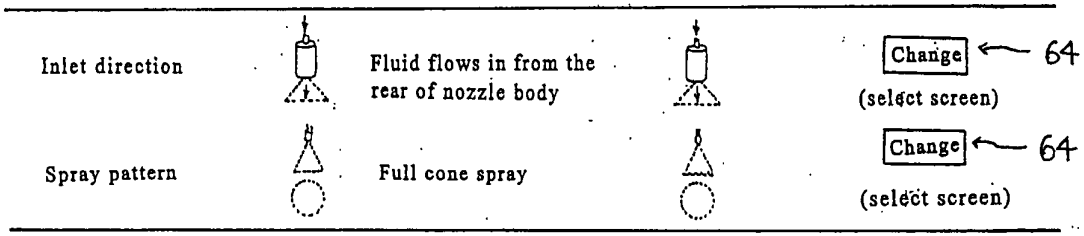
Reference nozzle you have entered	
Nozzle model number	BIM * 20075 303
Search code number	

Step 3: Designate criteria for retrieving similar nozzle

Reference nozzle spec (Spec of nozzle model number you have entered)

		Similar nozzle search criteria (select similar item from left spec)
Nozzle model number	○○○△△	
Search code number	SQS 479-666	
Product name, Atomizing nozzle, small injection full cone BIMJ		[Fluid] nozzles
Nozzle category,	[Fluid] nozzle	Not designated
Manufacture	○○○○	○ Not designated
Valve function,	Yes	◉ Yes, No
Strainer,	No	○ Not designated
		○ Yes, No
Orifice material,	Stainless steel	Stainless steel ○ Not designated
Mounting,	screw, Rc, 1/8, Female	Standard Rc Size 1/8 ◉ Screw type, ○ Not designated Male/female, ○ Male ○ Female
		○ Flange type, Flange size, Not designated

Fig.25



Pressure-flow rate-spray angle characteristic table

Check arbitrary portion, Pressure, Flow rate, Spray angle (°)

Pressure
Flow rate
Spray angle
Right table can be displayed in desired unit
(Select unit →"conversion" button)
Pressure MPa
Flow rate ml/min
67
Convert
65
Display in catalog unit
68

0.03	385
0.05	490
0.1	670
0.15	810
0.2	920
0.3	1090
0.5	1340
0.7	1535
1	1780
–	–

66 66

Search allowable tolerance: ± (%) ± (%) ± 00 (°)

*Numeral for other liquid than water. Confirm liquid name in catalog

Relation between pressure and spray angle for this nozzle cannot necessarily be displayed. Confirm with catalog of nozzle manufacture.
Confirm size, shape and spec of nozzle in catalog.

Catalog image
Catalog image display
69
70
Search start

Conversion function for unit often used for nozzle design is set

Unit conversion table

Previous page
Reset

1. Check left portion of similarity (may be plural)
Nozzle including all criteria checked with single model number is retrieved.
(Note)
The greater the number of checks, the longer the search time. Even if not checked at all, nozzle having even a point of value between minimum and maximum of each numerical value of pressure, flow rate and spray angle in left table is retrieved, and therefore considerable time is taken.
2. Input numerical value of allowable tolerance in left table

Fig.26

Similar nozzle search

Search result list

Log-out (to content page)
Select search method

Search result is displayed for similar nozzle search criteria selected by you.
Begin here for explanation of search procedure

Similar nozzle search criteria you have entered

Detailed display of reference nozzle

Nozzle category	Liquid nozzle
Manufacture	Not designated
Valve function	Not designated
Strainer	Not designated
Orifice material	Tungsten carbide
Mounting	Screw type NPT or BSPT 1/4 male
Inlet direction	
Spray pattern	

Pressure-flow rate-spray angle characteristic table

Pressure (bar)	Flow rate (l/min)	Spray angle (°)
70	15.1	
—	—	15
±10 (%)	±10 (%)	±10 (%)

Search result list

Convenient functions:
Clicking search code number, the detail and catalog image of the particular nozzle are displayed.
Select display sequence of each column with rearrange button ▼.

Conversion function for unit often used for nozzle design is set

unit conversion table

Of one search item, first one is displayed.

71

Rearrange: Search code number | Ascending order | Go

No.	Search code number Click to display detail	Manufacture name	Nationality	Catalog language	Manufacture model number	Orifice material	Mounting, standard size, male or female	Valve	Strainer
1	SGS 531-973	OOO	JPN	Jpn	OOOXXX	Tungsten carbide	NPT or BSPT 1/4 male	—	—

Search result page

Fig.27

Similar nozzle search

Detailed search result display

Detailed spec of similar nozzle is on display.
Begin here for explanation of search procedure

Similar nozzle search criteria you have entered

Reference nozzle detail display

Nozzle category	Nozzle for liquid
Manufacture	Not designated
Valve function	Not designated
Strainer	Not designated
Orifice material	Tungsten carbide
Mounting	Screw type NPT or BSPT 1/4 male
Inlet direction	
Spray pattern	

Pressure-flow rate-spray angle characteristic table

Pressure (bar)	Flow rate (l/min)	Spray angle (°)
70	15.0	
—	—	15
±10 (%)	±10 (%)	±10 (%)

Search result detail display

Search code number SGS 531-973
Nozzle category: [Liquid nozzle] nozzle
SGS category name: Flat nozzle

Unit conversion table

Conversion function of unit often used for valve design is set

Manufacture	OOOO
Nationality	JPN
URL	http://www.ooo.co.jp/
Catalog language	jpn
Product name	Flat spray nozzle WashJet
Manufacture model number	B1/4MEG-SSTC-1508
Valve function	No
Strainer	No
Orifice material	Tungsten carbide

Fig.28

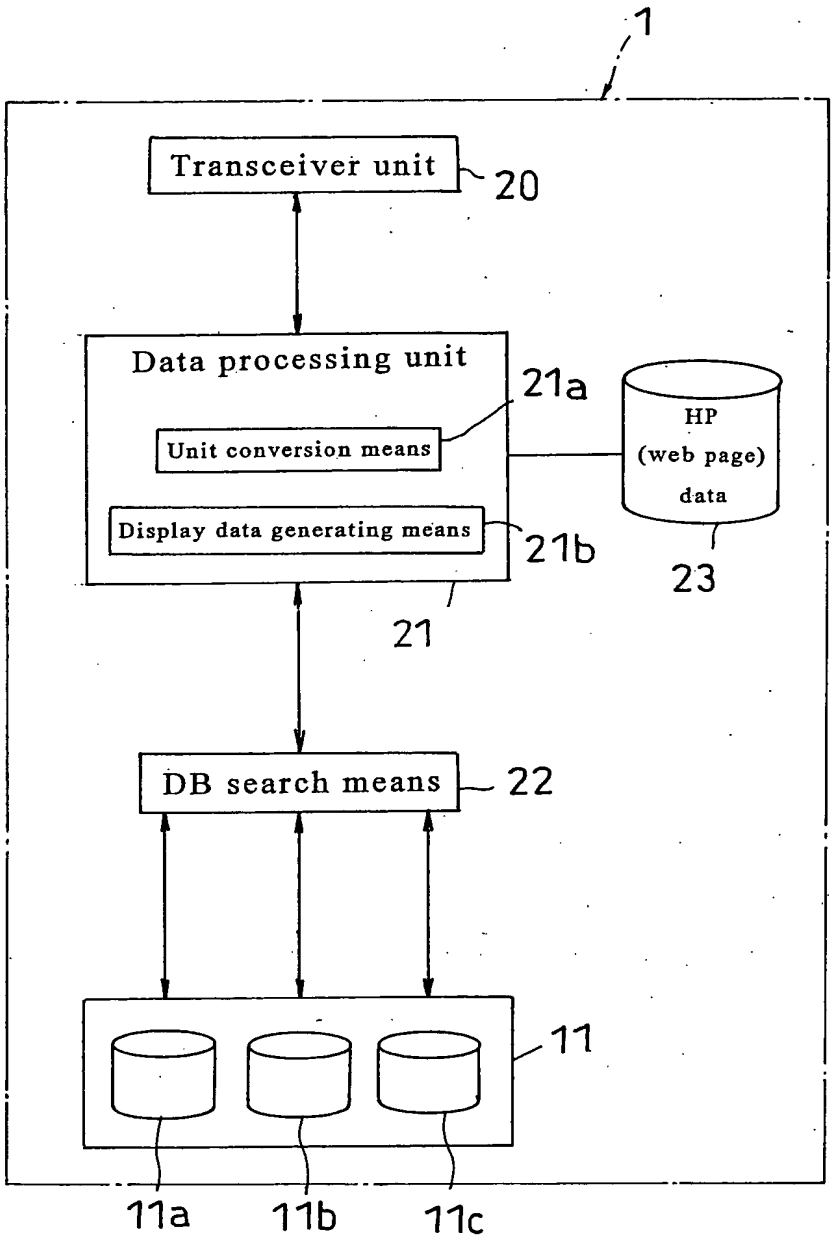

1
Transceiver unit
20
Data processing unit
21a
Unit conversion means
HP
(web page)
data
Display data generating means
21b
23
21
DB search means
22
11
11a
11b
11c

Fig.29

Search result list
Convenient functions:
By clicking model number, nozzle detail and catalog image are displayed
One-click conversion is possible by "unit select" button ▼ in pressure, flow rate column
Display order of each column can be selected by rearrange button ▼

Rearrange: manufacture | Ascending order | Go ←33

Of oooo items retrieved; 1 to 20 items on display

No	NRS code	Nationality	Catalog language	Manufacture model number Click and detail displayed	30a Pressure 30b			31a Flow rate 31b			Spray angle (°)	Material	Screw			Valve	Filter
					Catalog value		Conversion value	Catalog value		Conversion value				Standard	Size	Male or female		
					Pressure value	Unit	Unit select MPa ▼	Pressure value	Unit	Unit select l/min ▼							
1	A	U.S.		OOOXXX	2.0	bar	0.2	2.0	l/min	1.9	65	Brass	NPT or BSPT	1/8	Male		
2	B	Britain		OXOOOX	2.0	bar	0.2	2.0	l/min	1.9	65	Brass	BSPT	1/8	Male		
3	C	U.S.		ΔΔΔXX	2.0	psi	0.7	2.0	GPH	1.9	80	Stainless steel	NPT	1/8	Male		Yes
14	D	Japan		OOXXXO	2.0	kg/cm²	0.2	2.0	l/min	1.7	60	Brass	R	1/8	Male		
15	E	Japan		ΔXΔ	2.0	kg/cm²	0.2	2.0	l/min	4.2	70	Brass	R	1/8	Male		
16	F	Japan		ΔXΔΔΔ	2.0	bar	0.2	2.0	l/min	1.9	65	Brass	R	1/8	Male		
17	G	Japan		OXOOOX	2.0	bar	0.2	2.0	l/min	1.9	65	Brass	R	1/8	Male		
18	H	Japan		OXOO	2.0	Mpa	0.2	2	l/min	2.4	65	Brass	R	1/4	Male		
19	I	Japan		OOX	2.0	kg/cm²	0.2	2	l/min	1.7	60	Brass	R	3/8	Male		
20	J	Japan		OOΔΔΔO	2.0	Mpa	0.7	2	l/min	1.2	80	Stainless steel	R	1/4	Female		

Search result page | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Return | To next | ←32

Fig.30

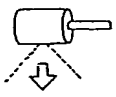
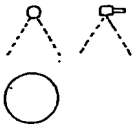
Search result detail display	
NRS code	
Manufacture model number	○○○○
Manufacture	□□□□
Nationality	Germany
Catalog language	
URL	http://www.AAA.com
Valve function	No
Filter	No
General nozzle name	Full cone nozzle
Manufacture name	Full cone nozzle
Main material	Plastic
Heat resistance temperature	90℃ 194F
Color	
Mounting screw	NPT 3/8 Male
Flange type	No
Orifice dia.	2.1mm 0.083inch
Free passage dia.	2.0mm 0.079inch
Weight	0.014Kg 2.2 lb ▼
Inlet direction	 Flows in from the rear of nozzle body and discharged axial to nozzle body
Spray pattern	 Full cone spray

Fig.31

Pressure, flow rate, spray angle

Catalog value

Pressure-flow rate characteristic table

Pressure (Mpa)	0.5	1.0	2.0	3.0	5.0	10.0
Flow rate (ml/min)	1.0	1.41	2.0	2.45	3.16	4.47

Pressure-spray angle characteristic table

Pressure (Mpa)	2.0
Spray angle (degree)	119

Unit conversion value (above catalog value can be converted)

Pressure-flow rate characteristic table

Flow rate [Mpa]	0.5	1.0	2.0	3.0	5.0	10.0
Pressure [l/min]	1.0	1.41	2.0	2.45	3.16	4.47

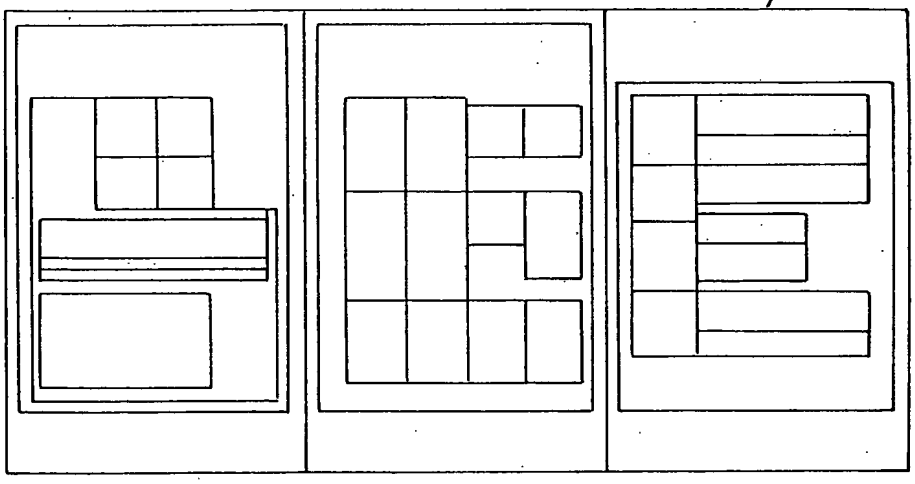
34

Pressure-spray angle characteristic table

Pressure [Mpa]	2.0
Spray angle	119

34

35



Previous page (search result list) | "Search method" select page (Input search criteria anew) | End search

Fig.32

Conversion page

Pressure

Before conversion — Value | Unit

After conversion — Value | Unit

Flow rate

Before conversion — Value | Unit

After conversion — Value | Unit

Specific gravity

(1) Flow rate of liquid actually sprayed can be converted to water flow rate

Flow rate of liquid sprayed | Specific gravity of liquid sprayed (g/cm³) ⇒ | Flow rate in terms of water

(2) Water flow rate can be converted to flow rate of actually sprayed liquid

Flow rate of liquid sprayed | Specific gravity of liquid sprayed (g/cm³) ⇐ | Flow rate in terms of water

Weight

Before conversion — Value | Unit

After conversion — Value | Unit

Length

Before conversion — Value | Unit

After conversion — Value | Unit

Area

Before conversion — Value | Unit

After conversion — Value | Unit

Viscosity: *Converted with specific gravity as 1 (originally, relation holds that "viscosity = dynamic viscosity x specific gravity")

Before conversion — Value | Unit

After conversion — Value | Unit

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Fig 33

Model number	Corresponding orifice dia. (mm)	Flow rate (L/min) Pressure (MPa) 0.03	0.1	0.2	0.3	0.4	0.5	0.6	0.7	1.0	2.0	3.5	Spray angle Pressure (MPa) 0.15	0.3	0.6	1.4
A	0.66	0.12	0.23	0.32	0.39	0.46	0.51	0.56	0.60	0.72	7.0	7.3	94°	110°	121°	124°
B	0.79	0.19	0.34	0.48	0.59	0.68	0.76	0.84	0.90	1.1	1.5	2.0	97°	110°	121°	124°
C	0.91	0.25	0.46	0.64	0.79	0.91	1.0	1.1	1.2	1.4	2.0	2.7	98°	110°	120°	123°
D	1.1	0.37	0.68	0.97	1.2	1.4	1.5	1.7	1.8	2.2	3.1	4.0	99°	110°	120°	123°
...	1.3	0.50	0.91	1.3	1.6	1.8	2.0	2.2	2.4	2.9	4.1	5.4	100°	110°	119°	122°

(A) 101 (B) (C)

100

Fig 34

(a)

Pressure	1	3	5	7	10	15
Flow rate	2	3.5	4.5	5.3	6.3	7.7

Pressure	3	5	10
Spray angle	45	50	55

(b)

No	Pressure	Flow rate	Spray angle
1	3	3.5	45
2	3	3.5	50
3	5	4.5	45
4	5	4.5	50
5	7	5.3	45
6	7	5.3	50

(c)

No	Pressure	Flow rate	Spray angle
	7	5.3	50 (Pressure5)

Fig 35

Pressure	1	3	5	10	15
Flow rate	2	3.5	4.5	6.3	7.7
Spray angle		50		55	

Fig 36

Pressure	1	3	5	10	15
Flow rate	2	3.5	4.5	6.3	7.7
Spray angle			50		

Fig 37

(a)

Pressure	1	3	5	10	15
Flow rate	2	3.5	4.5	6.3	7.7
Spray angle	＊50	50	＊50	55	＊55

(b)

Pressure	1	3	6.5	10	15
Flow rate	2	3.5	4.5	6.3	7.7
Spray angle	＊50	50	＊50	55	＊55

(c)

Pressure	1	3	7	10	15
Flow rate	2	3.5	4.5	6.3	7.7
Spray angle	＊50	50	＊55	55	＊55

Fig 38

Pressure	1	3	4.5	7	10	15
Flow rate	2	3.5	4.5	6.3	6.3	7.7
Spray angle	＊50	50	＊50	＊55	55	＊55

Fig 39

Pressure	1	3	5	10	15
Flow rate	2	3.5	4.5	6.3	7.7
Spray angle	* 50	* 50	50	* 50	* 50

Fig 40

Pressure	1	3	5	10	15
Flow rate	2	3.5	4.5	6.3	7.7
Spray angle	* 50	* 50	* 50	* 50	* 50

Fig.41

No	Liquid pressure	Gas pressure	Liquid amount	Gas amount	Angle	Addendum
1	0.02	0.02	2.8	25.2	33	
2	0.02	0.035	2.8	26.3	*33	In the presence of a plurality of same liquid pressure 0.02, angular value for nearest gas pressure 0.02 is employed
3	0.02	0.07	2.8	31.2	*34	In the presence of a plurality of same liquid pressure 0.02, angular value for nearest gas pressure 0.105 is employed
4	0.02	0.105	2.8	39.6	34	
5	0.03	0.035	3.5	26.3	*37	In the absence of same liquid pressure, angular value for near liquid pressure 0.035 is employed
6	0.03	0.07	3.5	31.2	*37	In the absence of same liquid pressure, angular value for near liquid pressure 0.035 is employed
7	0.03	0.105	3.5	39.6	*37	In the absence of same liquid pressure, angular value for near liquid pressure 0.035 is employed
8	0.03	0.14	3.5	45.3	*37	In the absence of same liquid pressure, angular value for near liquid pressure 0.035 is employed
9	0.035	0.14			37	
10	0.07	0.07	5.3	31.2	*42	Angular value for same liquid pressure 0.07 is employed
11	0.07	0.105	5.3	39.6	*42	Angular value for same liquid pressure 0.07 is employed
12	0.07	0.14	5.3	45.3	*42	Angular value for same liquid pressure 0.07 is employed
13	0.07	0.175	5.3	53.8	42	
14	0.14	0.14	7.8	45.3	42	
15	0.14	0.175	7.8	53.8	*42	In the presence of a plurality of same liquid pressure 0.14, angular value for nearest gas pressure 0.14 is employed
16	0.14	0.21	7.8	59.5	*42	In the presence of a plurality of same liquid pressure 0.14 and two nearest gas pressures 0.14 and 0.28, the smaller angular value is employed
17	0.14	0.28	7.8	73.6	47	

Fig.42

Search result list

Convenient functions:

By clicking SGS code number, nozzle detail and catalog image are displayed

Display order in each column can be selected by rearrange ▼ button.

Display order in each column can be selected by rearrange ▼ button.
Conversion function for unit often used for nozzle design is set

Unit conversion table

Table below displayed by unified unit conversion in pressure and flow rate

Pressure, kgf/cm2 ▼ Flow rate, ml/min ▼ ▶ Convert and display

Rearrange: manufacture name ▼ ascending order GO

46

No.	SGS Code number Display detail by click ▼	Manufacture name	Nationality	Catalog language	Manufacture model number	Pressure	Flow rate	Spray angle (at pressure)
1		△△△			— — — — —	2.0 bar	1.9 l/min	65° (at 2.0bar)
2		□□□□			— — — — —	2.0 kgf/cm2	1.9 l/min	65° (at 2.0kgf/cm2)
3		○○○○			— — — — —	100 psi	30.0 GPH	80° (at100psi)
4						2.0 bar	2 l/min	43° *1 (at 2.0bar)
5						2.0 bar	2 *3 l/min	43° *1 *3 (at 2.0bar)
6						1.8 bar	2 l/min	43° *2 (at 2.0bar)
7						2.0 bar	1.9 l/min	65° (at 2.0bar)
8						1.8 kgf/cm2	1.9 l/min	65° *2 (at 2.0kgf/cm2)
9						100 psi	30.0 GPH	80° (at100psi)
10						1.8 bar	2 l/min	43° *1 *2 (at2.0bar)
11						2.0 bar	2 *3 l/min	43° *1 *3 (at2.0barr)
12						2.0 bar	2 l/min	43° (at 2.0bar)
13						100 psi	30.0 GPH	80° (at100psi)
14						2.0 bar	2 l/min	43° *1 (at 2.0bar)
15						2.0 bar	2 l/min	43° *1 (at 2.0bar)

49

48

47

(*1) Nozzle manufacture catalog describes spray distance and spray width, which are displayed for reference by simple angular calculation. For more detail, see nozzle manufacture catalog.

(*2) Nozzle manufacture catalog does not describe spray angle for pressure input as search criteria, and spray angle based on most informative catalog pressure description is displayed. For more detail, see nozzle manufacture catalog.

(*3) Flow rate or spray angle for spraying other liquid than water is indicated. For more detail, see nozzle manufacture catalog.

(Notes)

Nozzle spec including model number, pressure and flow rate in search result list are indicated as described in catalog printed by nozzle manufacture. To prevent nozzle selection trouble, each customer confirm directly with each nozzle manufacture-for contents of printed catalog and retrieved nozzle. We take no responsibility for search result.

Previous page | Select "search method" | Log-out

Fig.43

Search result list

Convenient functions:

By clicking SGS code number, nozzle detail and catalog image are displayed

Display order in each column can be selected by rearrange ▼ button.

Display order in each column can be selected by rearrange ▼ button.
Conversion function for unit often used for nozzle design is set

Unit conversion table

Table below displayed by unified unit conversion in pressure and flow rate

Pw: Liquid Pressure. kgf/cm2 Pa: Gas pressure kgf/cm2 Convert and display

Qw: Liquid Flow rate. ml/min Qa: Gas Flow rate. ml/min

Rearrange: manufacture name ascending order GO

No.	SGS Code number Display detail by click ▼	Manufacture name	Nationality	Catalog language	Manufacture model number	Pressure Flow rate Spray angle				
						Pw	Pa	Qw	Qa	Spray angle (at Pw, Pa)
1						2.0 bar	2.0 bar	1.9 l/min	1.9 l/min	85° (at Pw 2.0bar, Pa 2.0bar)
2						2.0 kgf/cm2	2.0 kgf/cm2	1.9 l/min	1.9 l/min	85° (at Pw 2.0kgf/cm2, Pa 2.0kgf/cm2)
3						100 psi	100 psi	30.0 GPH	30.0 GPH	80° (at Pw 100psi, Pa 100psi)
4						2.0 bar	2.0 bar	2 l/min	2 l/min	43° ±1 (at Pw 2.0bar, Pa 2.0bar)
5						2.0 bar	2.0 bar	2 ±3 l/min	2 l/min	43° ±1°±3 (at Pw 2.0bar, Pa 2.0bar)
6						1.8 bar	2.0 bar	2 l/min	2 l/min	43° ±2 (at Pw 2.0bar, Pa 2.0bar)
7						1.8 bar	2.0 bar	1.9 l/min	1.9 l/min	85° ±2 (at Pw 2.0bar, Pa 2.0bar)
8						2.0 kgf/cm2	2.0 kgf/cm2	1.9 l/min	1.9 l/min	85° (at Pw 2.0kgf/cm2, Pa 2.0kgf/cm2)
9						100 psi	100 psi	30.0 GPH	30.0 GPH	80° (at Pw 100psi, Pa 100psi)

(*1) Nozzle manufacture catalog describes spray distance and spray width, which are displayed for reference by simple angular calculation. For more detail, see nozzle manufacture catalog.

(*2) Nozzle manufacture catalog does not describe spray angle for pressure input as search criteria, and spray angle based on most informative catalog pressure description is displayed. For more detail, see nozzle manufacture catalog.

(*3) Flow rate or spray angle for spraying other liquid than water is indicated. For more detail, see nozzle manufacture catalog.

(Notes)

Nozzle spec including model number, pressure and flow rate in search result list are indicated as described in catalog printed by nozzle manufacture. To prevent nozzle selection trouble, each customer confirms directly with each nozzle manufacture for contents of printed catalog and retrieved nozzle. We take no responsibility for search result.

Fig.44

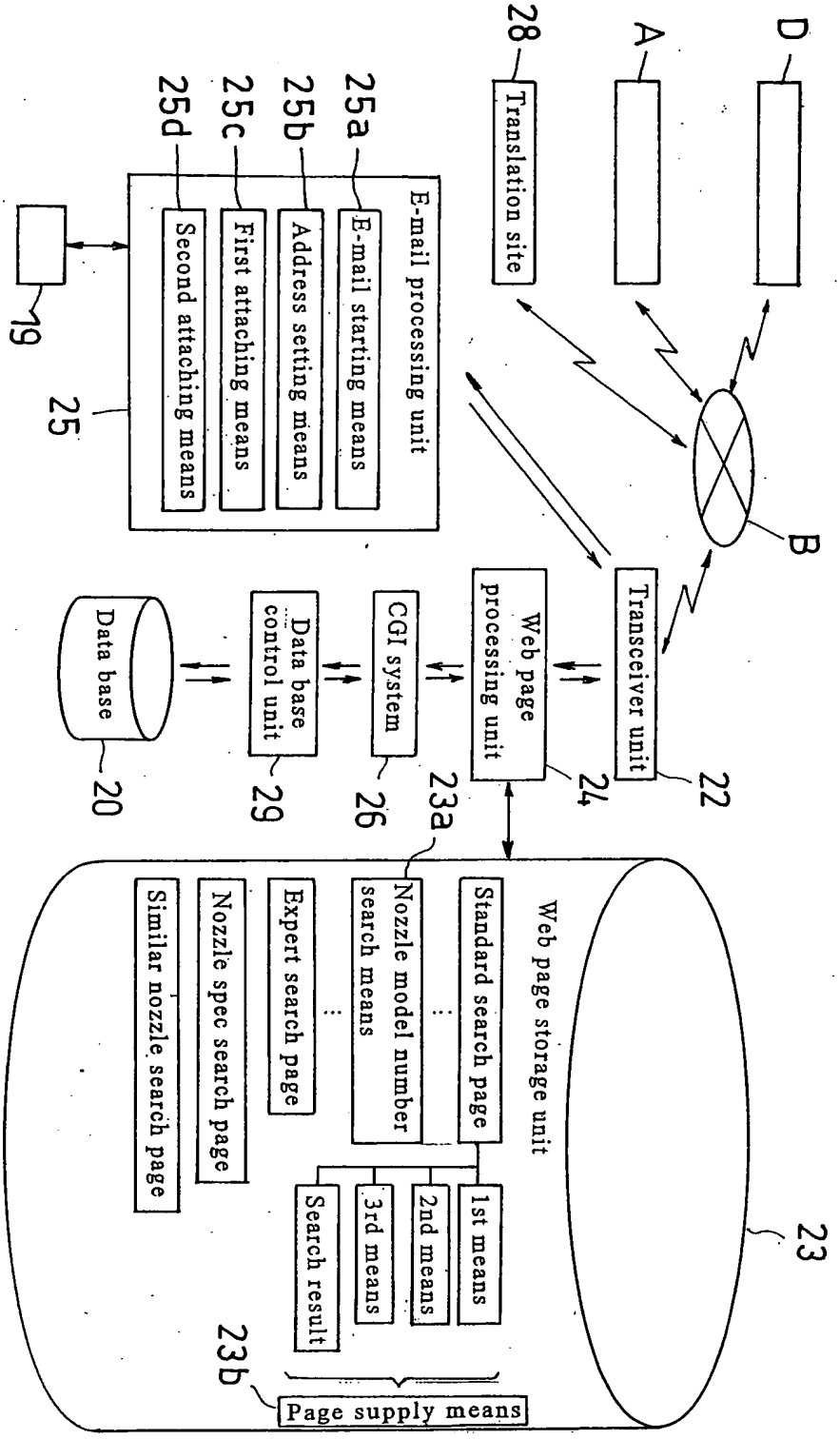
D
A
B
28
Translation site
25a
25b
25c
25d
E-mail processing unit
E-mail starting means
Address setting means
First attaching means
Second attaching means
19
25
Transceiver unit
22
Web page processing unit
24
CGI system
26
23a
Data base control unit
29
Data base
20
Web page storage unit
23
Standard search page
Nozzle model number search means
Expert search page
Nozzle spec search page
Similar nozzle search page
1st means
2nd means
3rd means
Search result
23b
Page supply means

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Fig 45

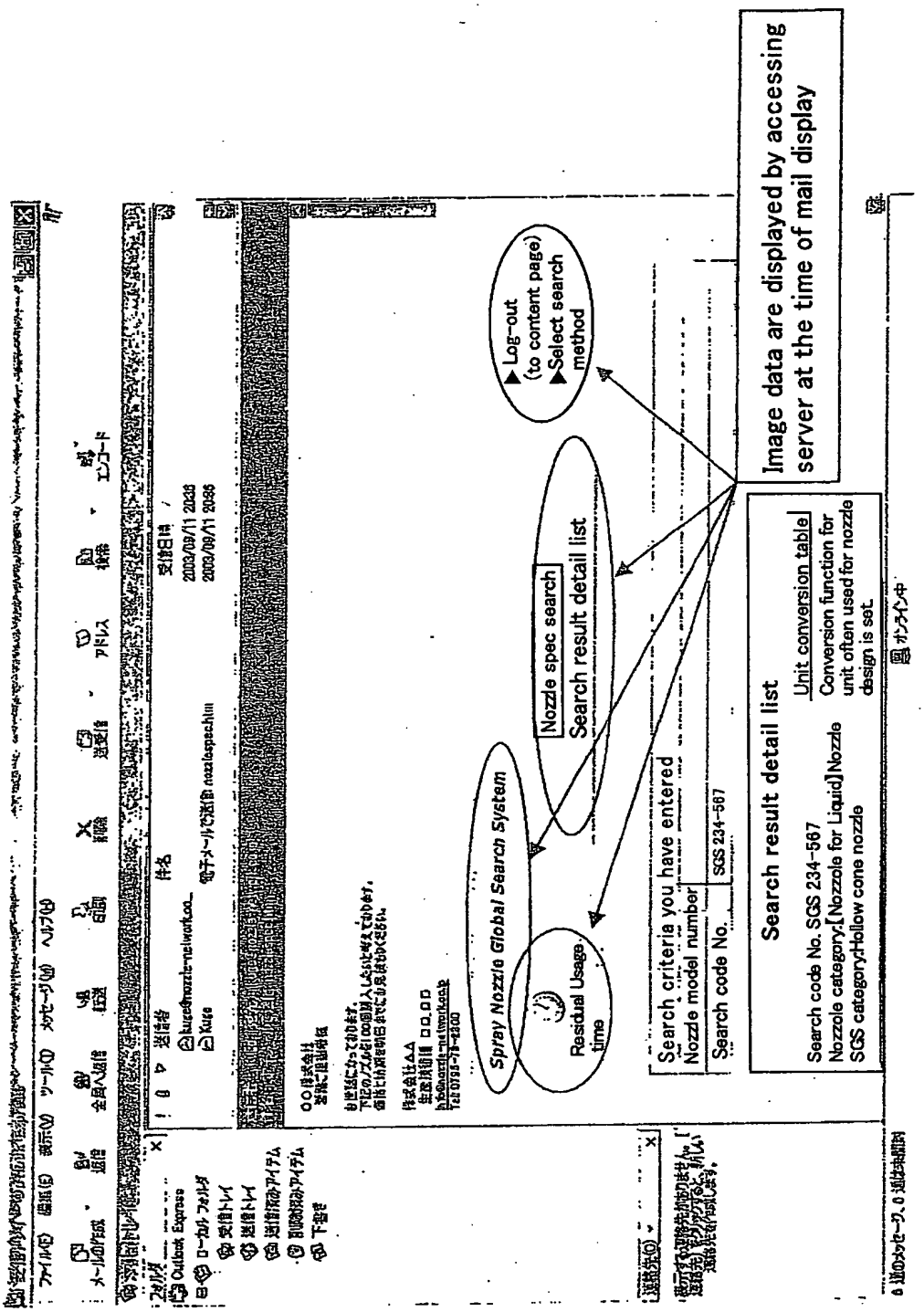
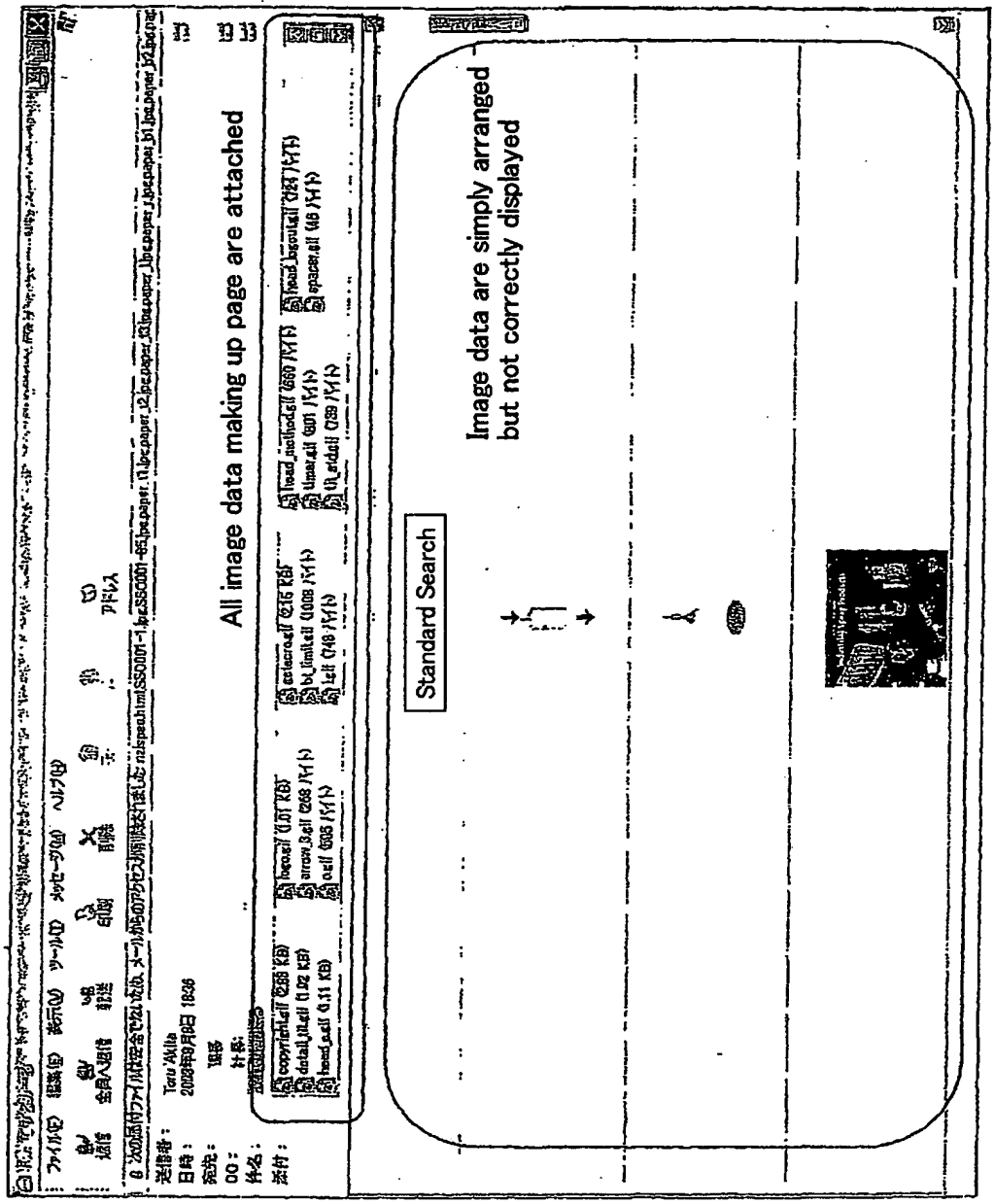


Fig 46


All image data making up page are attached
Standard Search
Image data are simply arranged
but not correctly displayed

10/539673

Fig 47

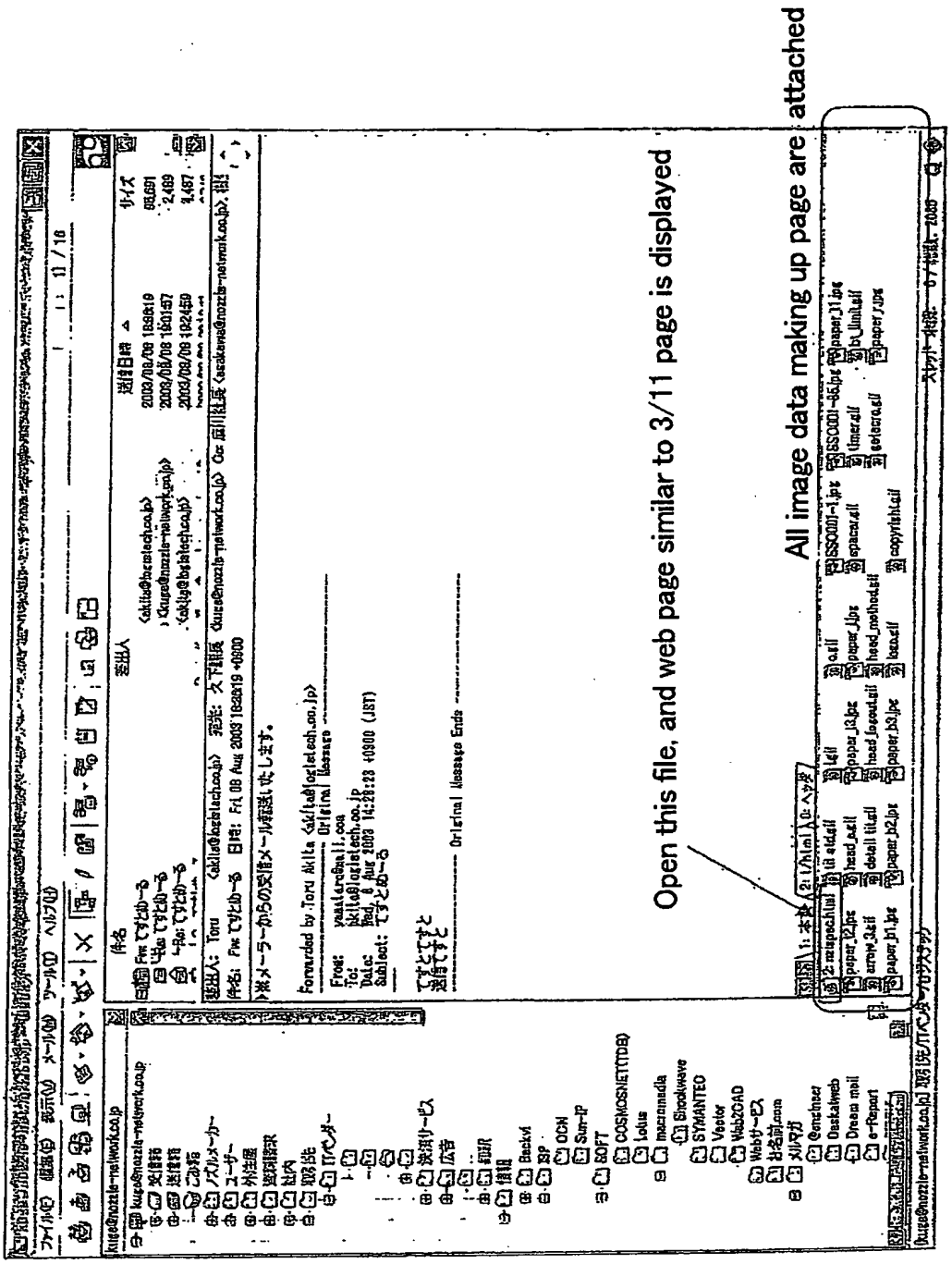


Fig 48

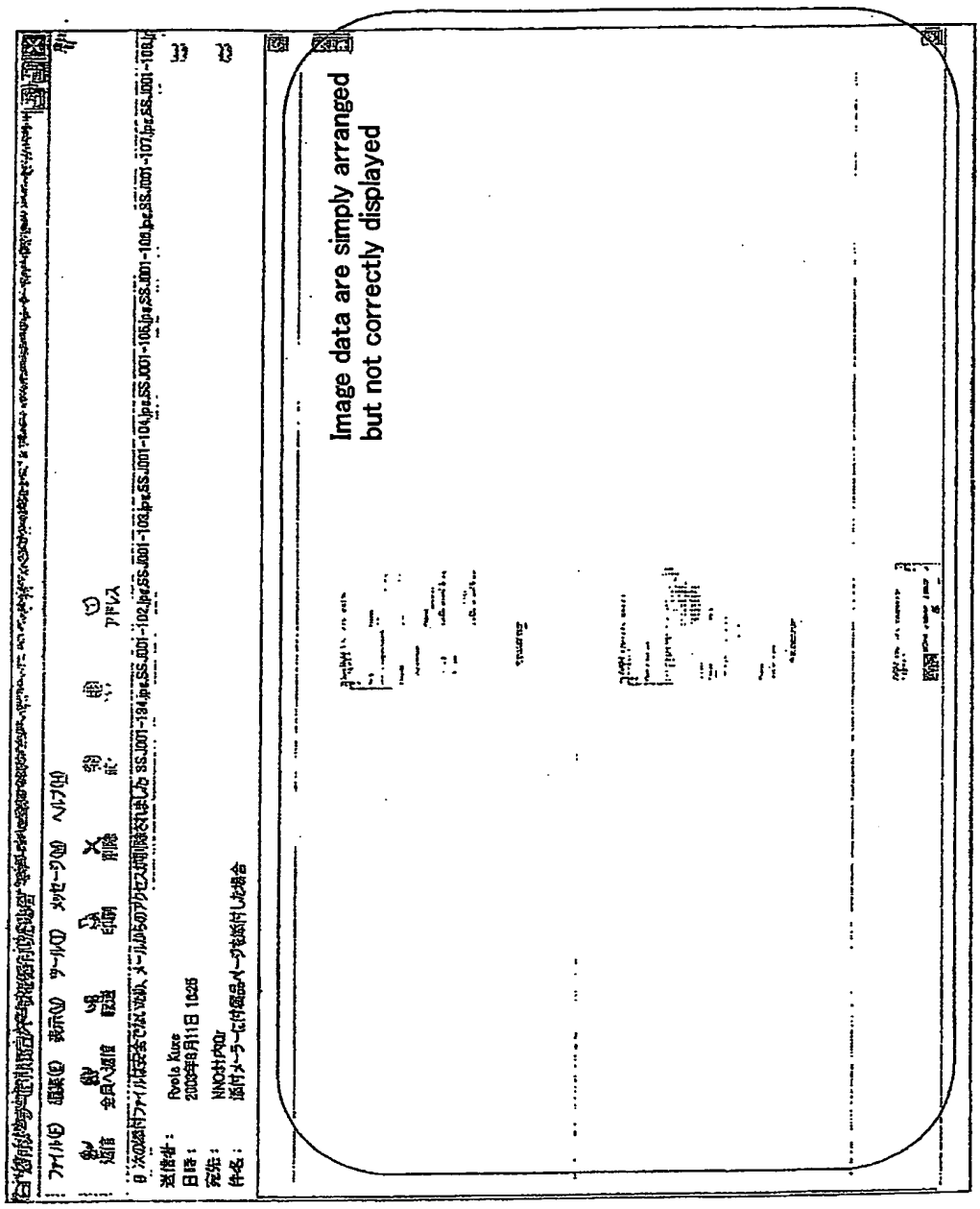
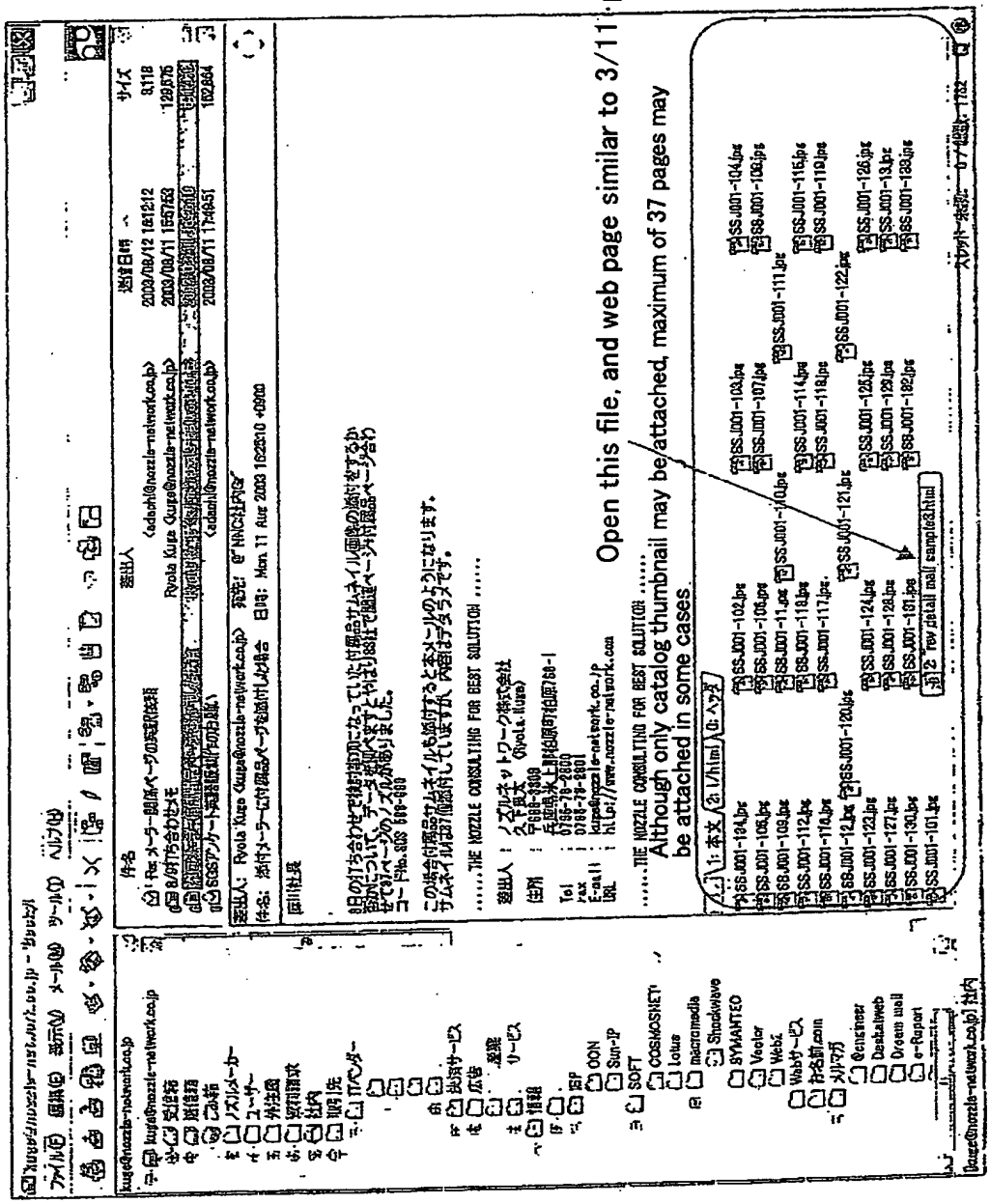


Image data are simply arranged
but not correctly displayed

10/539673

Fig 49



10/539673

Fig 50

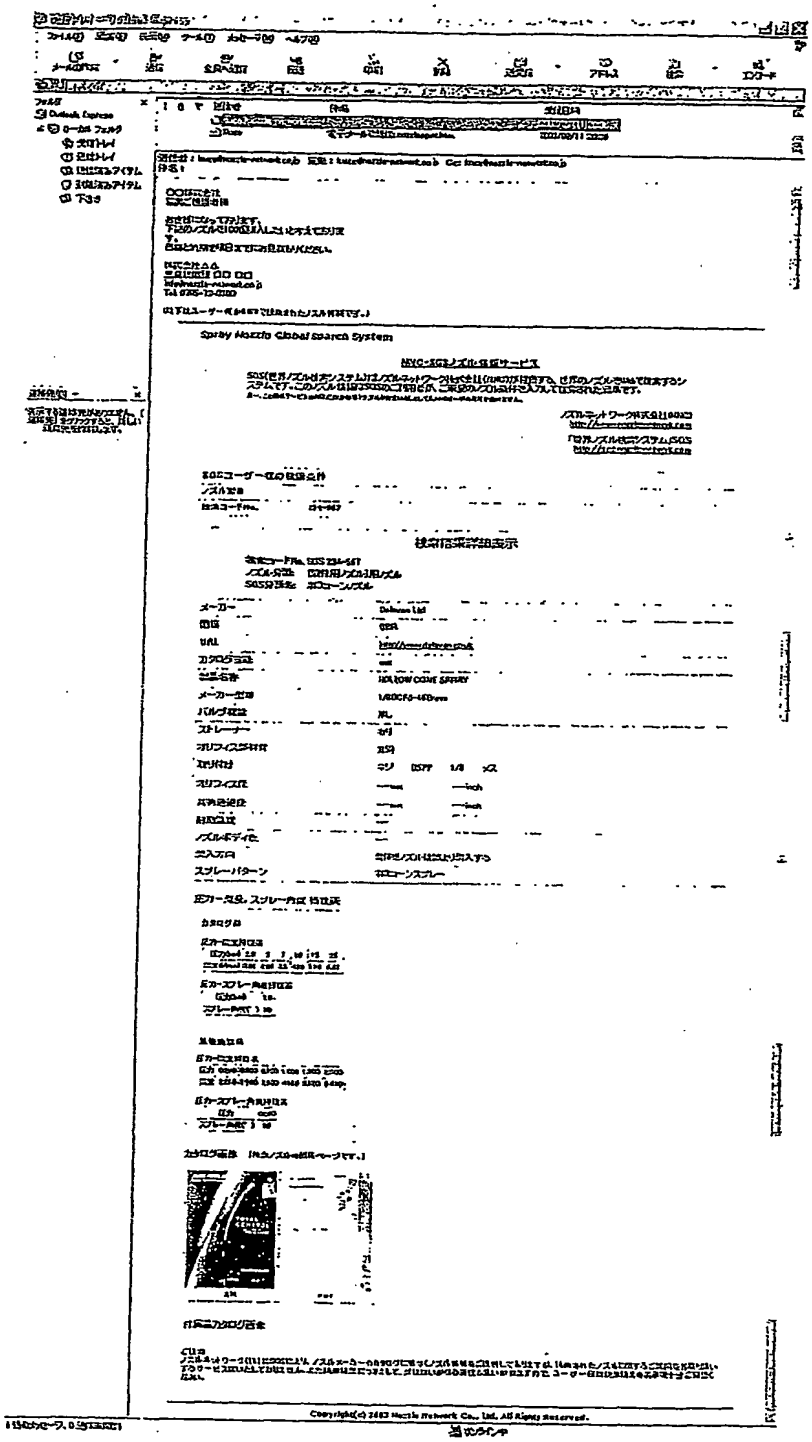


Fig 51

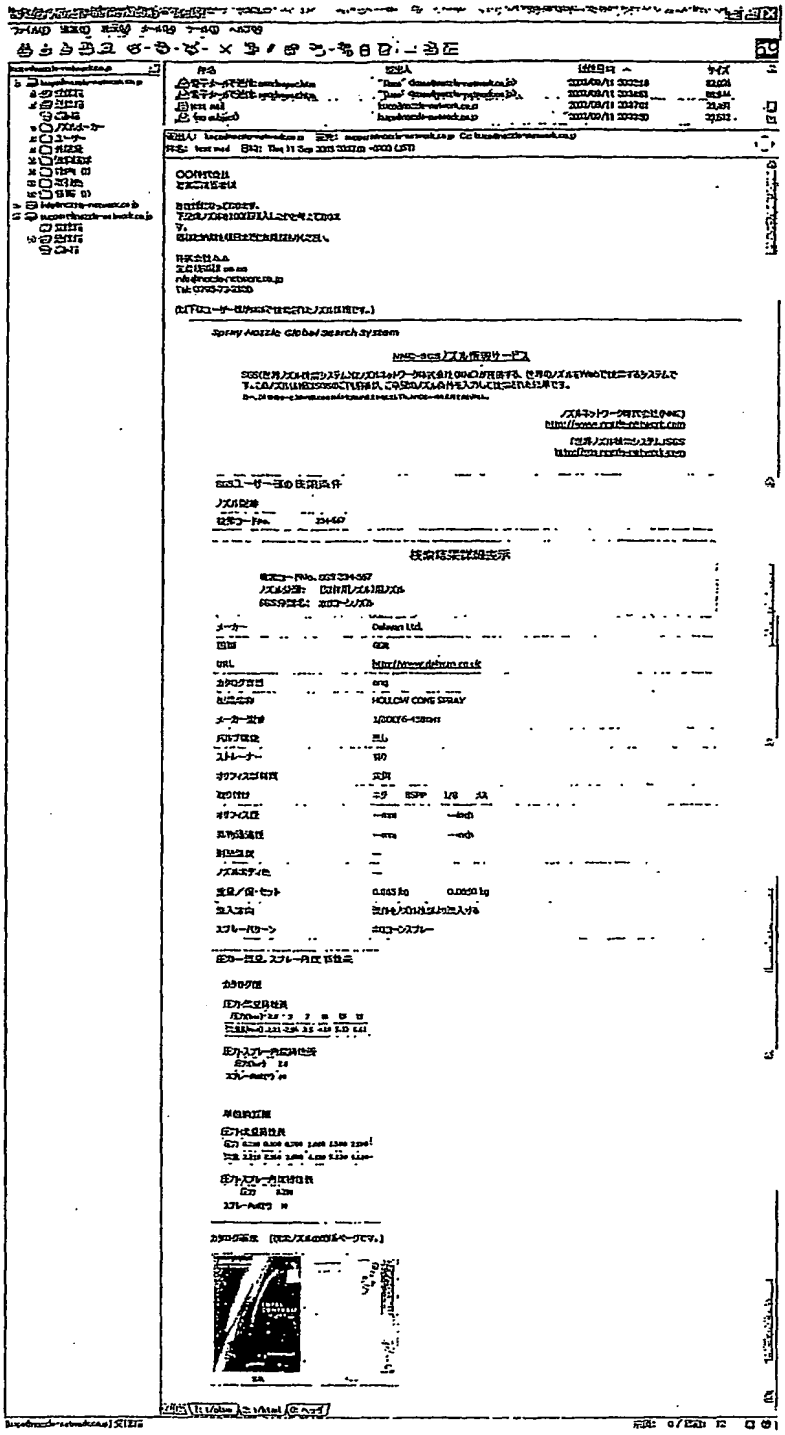
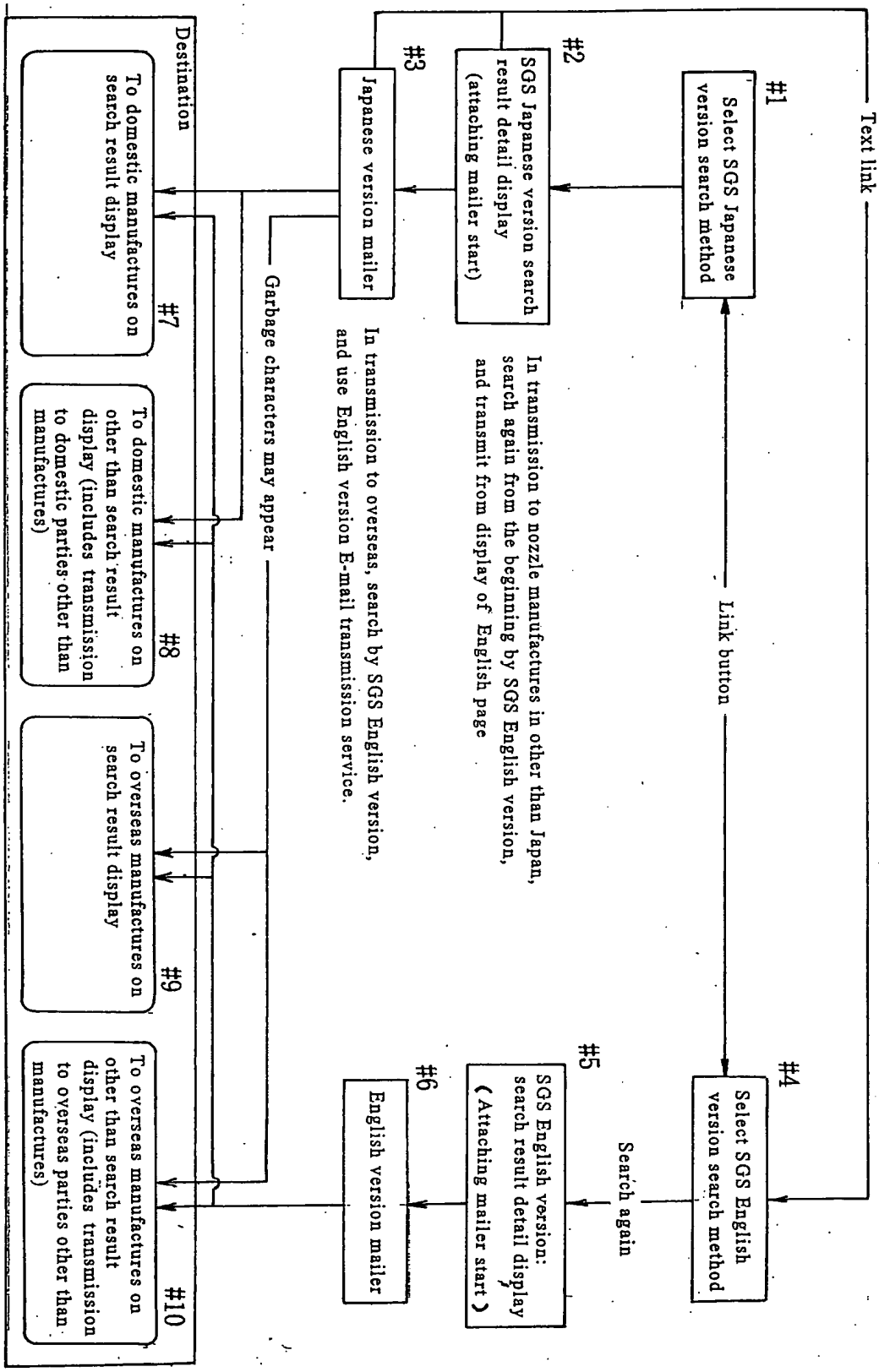

Spray Nozzle Global Search System
Delavan Ltd.
HOLLOW CONE SPRAY

Fig.52

List of mailer attaching method and practicability evaluation

		Comparative example 1	Comparative example 2	Comparative example 3	This invention
Attached file		HTML file	HTML file Page constituting image data Catalog thumbnail image	HTML file Catalog thumbnail image	HTML file Catalog thumbnail image
Problem	Outlook Express	Server access required to display image	Display abnormal Many image files attached Attached file cannot be opened	Display abnormal Many image files attached Attached file cannot be opened	No problem
	Becky!	Server access required to display image	Many image files attached	Many image files attached	No problem
Practicability		×	×	×	○
		Membership charging system. Not accessible	Many unnecessary images are attached embarrassing users	Many images are attached embarrassing users	
Reference drawing		Fig. 13	Fig. 14, 15	Fig. 16, 17	Fig. 18, 19

Fig.53


Text link
#1
Select SGS Japanese version search method
Link button
#4
Select SGS English version search method
#2
SGS Japanese version search result detail display (attaching mailer start)
In transmission to nozzle manufactures in other than Japan, search again from the beginning by SGS English version, and transmit from display of English page
Search again
#5
SGS English version: search result detail display (Attaching mailer start)
#3
Japanese version mailer
In transmission to overseas, search by SGS English version, and use English version E-mail transmission service.
#6
English version mailer
Garbage characters may appear
Destination
To domestic manufactures on search result display
#7
To domestic manufactures on other than search result display (includes transmission to domestic parties other than manufactures)
#8
To overseas manufactures on search result display
#9
To overseas manufactures on other than search result display (includes transmission to overseas parties other than manufactures)
#10

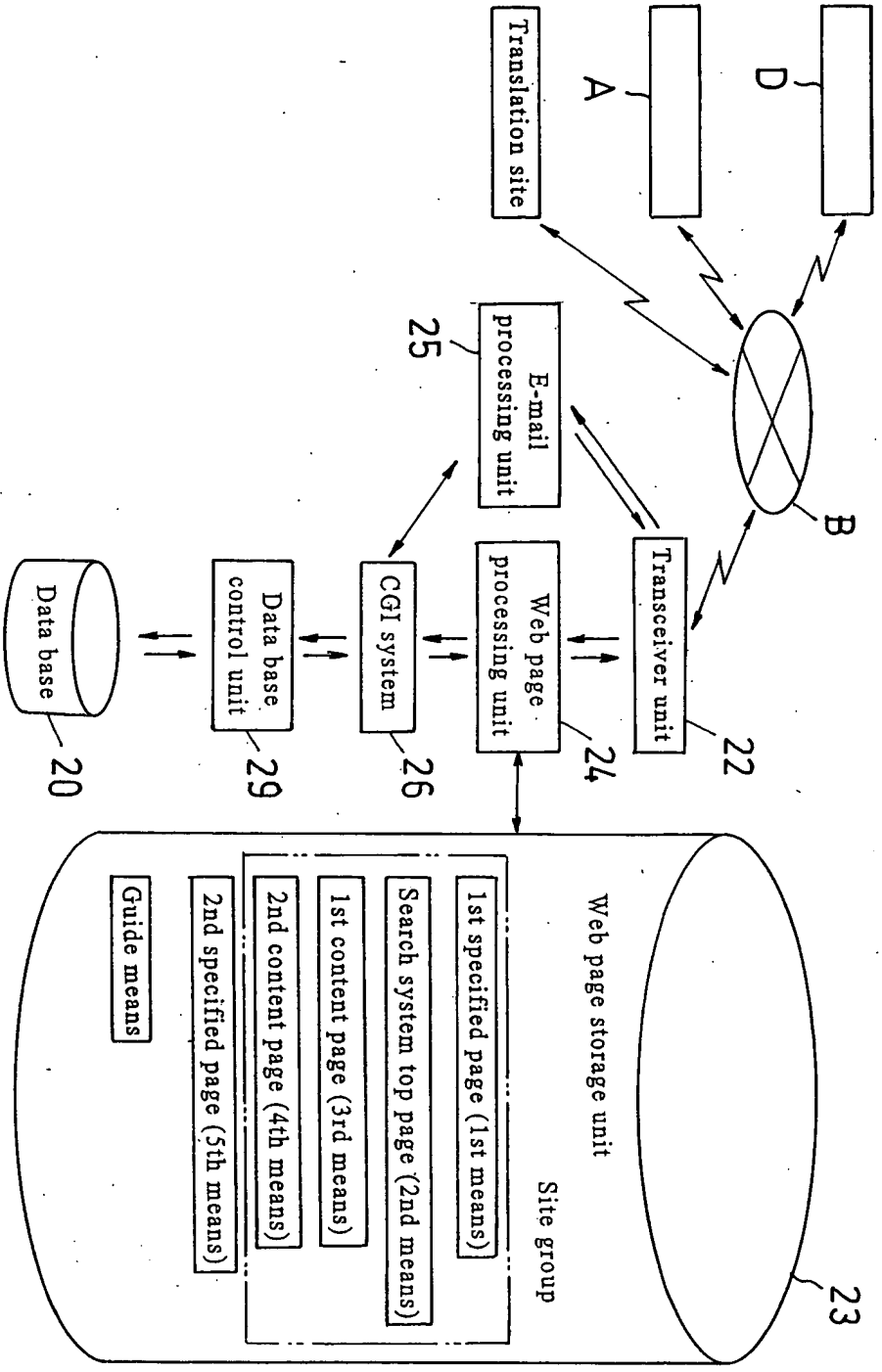

Translation site
A
D
B
25
E-mail processing unit
Transceiver unit
22
Web page processing unit
24
CGI system
26
Data base control unit
29
Data base
20
Web page storage unit
23
Site group
1st specified page (1st means)
Search system top page (2nd means)
1st content page (3rd means)
2nd content page (4th means)
2nd specified page (5th means)
Guide means

Fig.54

Fig.55

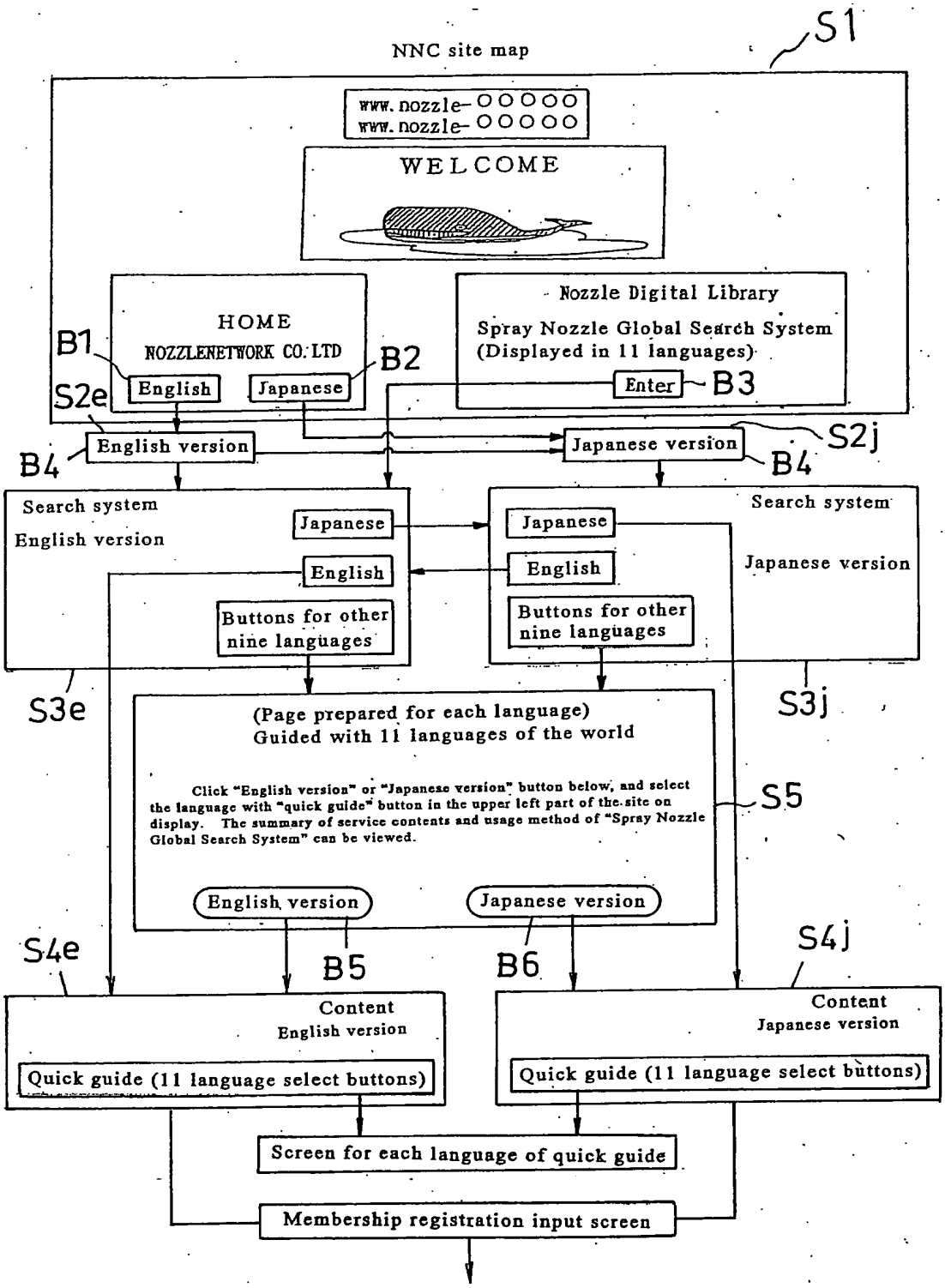
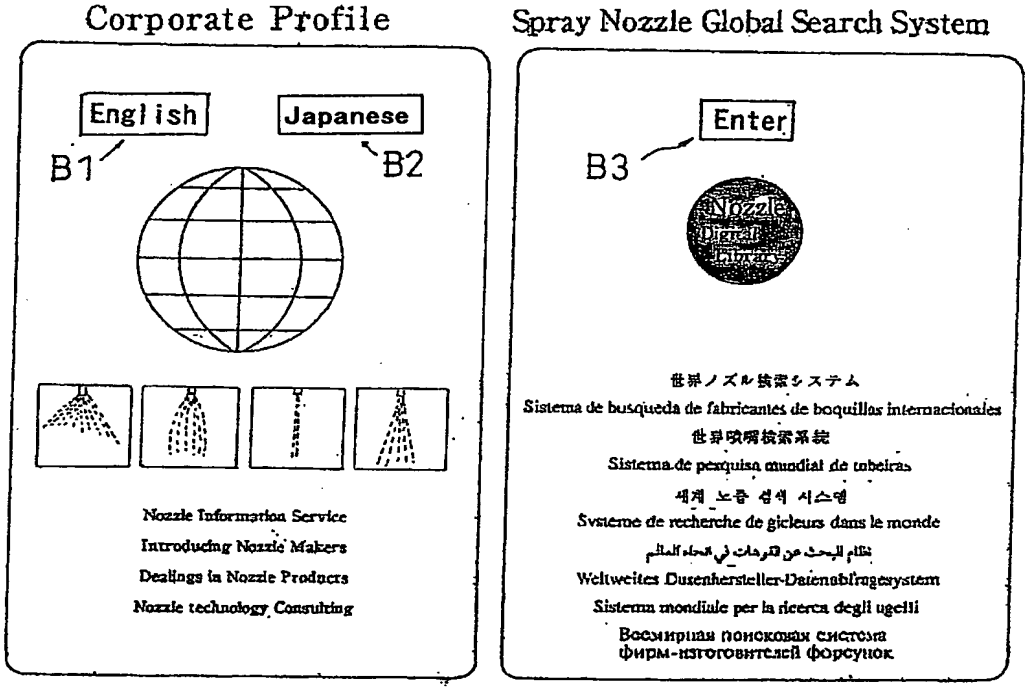

NNC site map
S1
www.nozzle-OOOOO
www.nozzle-OOOOO
WELCOME
HOME
NOZZLENETWORK CO.LTD
B1
English
Japanese
B2
S2e
Nozzle Digital Library
Spray Nozzle Global Search System
(Displayed in 11 languages)
Enter
B3
English version
Japanese version
S2j
B4
B4
Search system
English version
Japanese
English
Buttons for other nine languages
Search system
Japanese version
Japanese
English
Buttons for other nine languages
S3e
S3j
(Page prepared for each language)
Guided with 11 languages of the world
Click "English version" or "Japanese version" button below, and select the language with "quick guide" button in the upper left part of the site on display. The summary of service contents and usage method of "Spray Nozzle Global Search System" can be viewed.
S5
English version
Japanese version
S4e
B5
B6
S4j
Content
English version
Quick guide (11 language select buttons)
Content
Japanese version
Quick guide (11 language select buttons)
Screen for each language of quick guide
Membership registration input screen

Fig 56

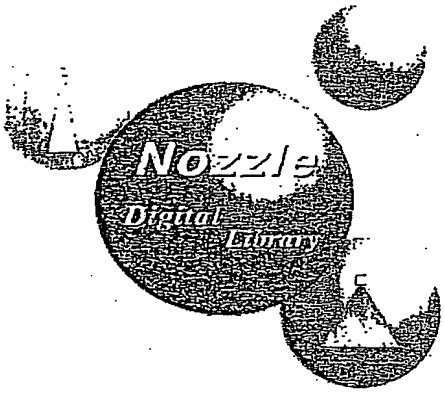


10/539673

Fig.57

Spray Nozzle Global Search System

Retrievable by internet from any part of the world



[SKIP INTRO MOVIE]

30

Select language Language

Translation site: This site can be mechanically translated into languages of the world

This system is provided by ooo Co., Ltd.
The spray nozzle is used to spray various fluids through water or air nozzle for cooling and cleaning in all industries of the world. There is at least several tens of generally-called atomization and spraying nozzle manufactures, which include overall nozzle manufactures and unique nozzle manufactures specializing in atomized spray nozzle. In this way, various nozzle manufactures have various features. The ooo Co., Ltd. with its "Spray Nozzle Global Search System" is in a position to provide a vast amount of nozzle information to nozzle users over the world through the internet.

Fig 58

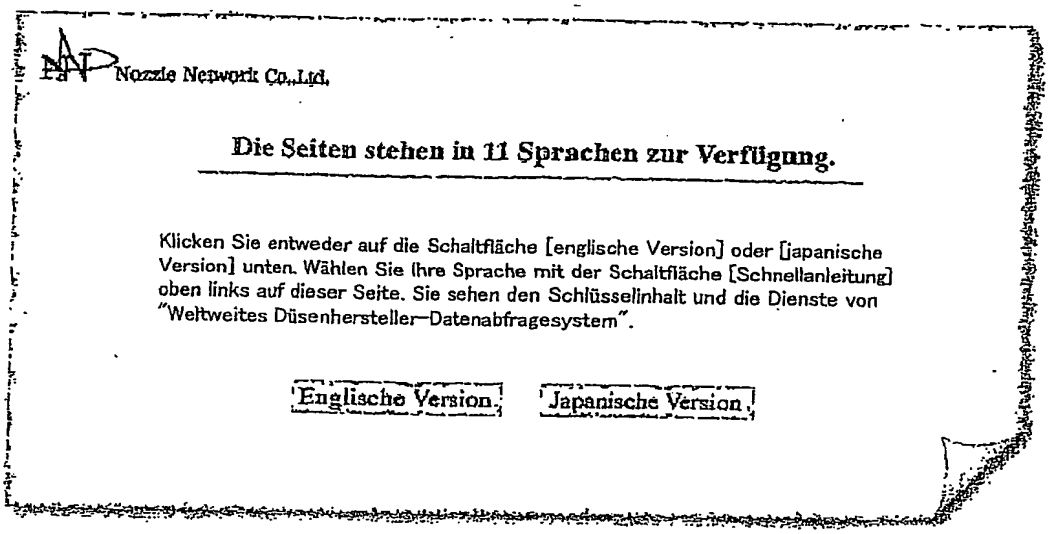


Fig.59

Data base carrying 7.5 million nozzle search items

Spray Nozzle Global Search System

Member please log in from here

Member entrance ~ 42

Start here for immediate use

クイックガイド
Quick Guide
快速检索指南
Guia rapida
Guia rapido
Guide d'utilisation rapide
Schnellanleitung
Guida rapida
간단안내서
Краткое руководство
دليل الاستخدام السريع

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Spray Nozzle Global Search System

oooo Co., Ltd. has developed a novel system accessible from anywhere in the world to search for spray nozzles of all over the world through internet.

The spray nozzle is used as an essential part in all fields of industry over the world. This system which has been developed by our company offers the users the chance of selecting the most proper nozzle.

The data base has registered therein about 7.5 million items of nozzle information and numerical nozzle data including images in a total of 2900 pages of catalogs of 20 nozzle manufactures of the world and at least 110 thousand types of nozzle products, accessories, related devices and other nozzle data carried in the catalogs. The job that has conventionally required several hours to search from printed catalogs can be performed quickly by this system.

Mechanically translated to languages of world

Translation site ~ 41

Users not registered as member

Users not registered as member are requested to take the registration procedure by reading the following explanation.

First, register your membership (free of admission fee and membership fee), and take the (fee-charging) usage procedure. Each procedure can be started at the usage procedure column in the lower part of the screen.

Fig.60

Contents of "Spray Nozzle Global Search System"

I Features of SGS	The global spray nozzle catalog digitized into a data base combined with the novel search system developed by us produces a surprisingly synergic effect. 43 View detail
II Largest ever data base in nozzle history	Classification of 7.5 million search items including nozzle manufactures, nozzle model numbers, flow rate and spray angles are available for your service. 43 View detail
III Type of search method	Search for model number by inputting nozzle specification or, conversely, search for specification and similar nozzles by inputting nozzle model number. View detail
IV Search for nozzle by simple operation	You can see the desired nozzle manufactures, nozzle model numbers, nozzle spec and similar nozzles through the simple search procedure and the search image screen. View detail
IX Usage rules	Always read before membership registration. Be sure that at the time of membership registration, you are required to agree to all the stipulations of the usage rules. View detail
XVI Download catalog	Our "Corporate Profile" and the catalog of the spray nozzle global search system can be downloaded. View detail

Procedure for use

I Application for membership registration (no admission fee or membership fee)	To use the system, first register your membership (free of admission fee and membership fee) to acquire user ID and pass word. The user ID and pass word remain valid until your resignation. Describe in English in English site and in Japanese in Japanese site. File application from here
II Payment of usage fee	The system can be used on time basis at a fee. Follow the process for paying your usage fee. Pay here

|Confirmation and change of membership information | Confirmation of user ID and pass word | Confirmation of use | Application for resignation|

Fig.61

Quick Guide to "Spray Nozzle Global Search System"

Brief description for hurried users
Speedily search for world nozzle information

1. A system that can be used at any place in the world to find the desired nozzle within several tens of seconds from at least 110 thousand items of products of 20 nozzle manufactures of the world through the internet.
2. Four types of search method and simple operation
Just input preset items on search criteria input screen and click search button

Search type	Description
Standard search	Rough model number can be retrieved by simple input items
Expert search	Pinpoint model number search possible by detailed input items
Nozzle spec search	Retrieve manufacture and nozzle spec by inputting nozzle model number
Similar nozzle search	Similar nozzle can be retrieved by inputting nozzle model number

3. Procedure for usage
First, access the procedure screen for membership registration (free of admission and membership fees). Each site screen guides you sequentially to start nozzle search.

Membership registration (free of admission and membership fees)

Start here for membership registration

Select usage time and fee

Follow fee payment procedure

Start nozzle search About 5 minutes

4. Usage fee and method of payment
The system can be used on time basis at a fee, which is payable only by credit card. Payment by other than Japanese currency can not be done from Japanese site. Use English site to pay in other than Japanese currency.

Now in sales campaign period

Usage time	Special discount usage fee (before tax)
10 minutes	yen
30 minutes	yen
60 minutes	yen

Payment method
Pay only by credit card

Currency conversion site

Agreed usage time starts counting when clicking the "search start" button first on search criteria input screen. Within agreed period, four types of search methods can be repeatedly and freely used.

(Remarks)

1. After understanding "Spray Nozzle Global Search System" (SGS) roughly by quick guide, always confirm the detailed contents of each item on table of contents.

2. For membership registration, input in Japanese in Japanese site and English in English site.

Apply for membership registration

Return